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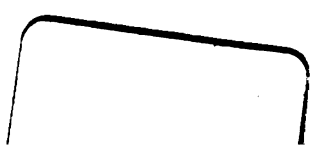

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THE SANITARIAN.

JANUARY, 1901.

NUMBER 374.

A SURVEY OF PUBLIC SANITATION IN THE NINETEENTH CENTURY.

Presidential Address at the Twenty-Eighth Annual Meeting of the American Public Health Association, Indianapolis, Indiana, October 22, 1900.*

BY PETER H. BRYCE, M. A., M.D., Toronto, Can.

It becomes my pleasing privilege, as your duly elected President for the year 1900, to express to you my deep sense of the honor conferred upon my country, and myself as her respresentative, through your generous act. To have been called upon to preside over the deliberations of a congress which is engaged in studying questions of vital interest to three nations and to ninety millions of people has, indeed, served to impress me not more with the magnitude of the work we are engaged in than with the limitations of my powers to adequately fulfill the duties and responsibilities which the position involves. Allow me, therefore, ladies and gentlemen, to bespeak for myself your generous indulgence and kindly sympathy while performing the duties of your presiding officer, and for my excuse in those matters wherein I may fail, I must take refuge under that time-honored excuse expressed in the words of the old Latin poet:

> Si possem, sanior essem,
> Sed trahit invitam nova vis; aliudque cupido
> Mens aliud suadet: video meliora proboque
> Deteriora sequor. OVID (M.), 7-18.

With the passing of more than a quarter of a century since the first annual meeting of this association many of its earlier members have ceased from their labors; but it becomes my official duty to record the untimely deaths of several members who have passed away while still in the prime of life. I recall the names of Ed-

*From Proceedings A. P. H. A., in advance of publication, by courtesy of the Secretary.

ward Oram Shakespeare, M.D., Philadelphia, Pa.; George Edam Coulthard, M.D., Fredericton, N. B., and Henry Cooper Crouch, M.D., Denver, Col.

To mention the name of Dr. Shakespeare is but to present to mental vision the author of that classical work on cholera which has supplied us with so comprehensive an outline of the conditions which have governed in the past, and still are largely present in outbreaks of this scourge of former times. I can well recall Dr. Shakespeare, as he labored at quarantine on the Delaware, associated with State and municipal officers, in 1892, to protect his city and country against the threatened invasion of this disease. Since then his kind and genial presence was with us at our meeting, in Philadelphia, in 1897. His demise has seemed sudden to many who knew nothing of his illness till his death was chronicled on June 1.

Of Dr. Coulthard, the Secretary of the Provincial Board of Health, New Brunswick, it may be said that all who have known him during the past five years, during which he has regularly attended the meetings of the association, will retain a recollection of him as a gentlemanly but retiring man, but who proved on acquaintance a genial friend and an enthusiastic officer of health. His work was well known and appreciated in his own province, while his activities as a physician and citizen in Fredericton were spoken of most favorably by the local press. In him the public health service in Canada loses an active and conscientious worker, and this association a loyal member.

Of others who have passed away the association has had less opportunity of learning their worth. The positions, however, which they have held in their own State and city have marked them as active workers in the field of public medicine, and they have passed *magna cum laude* to their rest with the honored dead.

But while I recall the memory of our dead I take this opportunity of expressing, as their official mouthpiece, the sense of pleasure at which the members of this association may fairly indulge in as they find themselves greeted by the living representatives of this beautiful city, in a State in what is rapidly becoming to us the older West. I am not exactly informed as to just at what age an American State attains its majority; but I take it that any State that has presented a President to the nation—and such a President as Benjamin Harrison—must be looked upon as having arrived at years of full maturity. The association trusts, however,

that even a mature State may still find something of value to be obtained from having its sessions held in its capital city, and in return its members hope to bear away with them memories, not only of kindly welcome and generous entertainment, but also evidences of the application of science to public health problems in a manner often more easily carried out than where the traditions of the hoary past still linger. The association feels sure, however, that in a State whose earliest boundaries indeed were embraced in those two wondrously euphonious words: Ohio, the Beautiful, and Onabache, the White, that its members will experience from her citizens every kindness which can spring from those who live constantly under the beneficent tutelage of the good deities of two such beautiful streams.

It has become the established custom of years past to summarize, in the presidential address, some of the more important phases of public health work which have attracted scientific attention during the year preceding each annual meeting. The past year, like those which have preceded it, has also presented matters of interest which might, with profit, be referred to; but as such will naturally engage our attention in the several papers to be presented at subsequent sessions, I have deemed it not inappropriate to attempt a survey of public sanitation as embraced in the history of social and scientific progress during the century just closing, and can only hope that from such we may obtain some idea, however inadequate, of the truth, beautifully expressed by Emerson in his essay on history, that "There is a relation between the hours of our life and the centuries of time. As the air we breathe is drawn from the great repositories of nature, as the light on my book is yielded by a star a hundred millions of miles distant, as the poise of my body depends on the equilibrium of centrifugal and centripetal forces, so the hours shall be instructed by the ages and the ages explained by the hours."

In order, then, to obtain any adequate conception of the causes which have brought "public health" as a science to the position we find it occupying at the close of the century, we have to inquire into the influences which have been at work during the hours of the century, and of that period just preceding it, the "Renaissance" which may be justly called the birthday of modern science, and of which Carlyle said, "Behold, a new era is come!—the future is all the brighter that the past was base."

Of it, as epitomized in the French Revolution, we may truly

say that though its advent was marked by portents, agonies and birth throes, yet there it stood, an indubitable fact, with infinite potentialities, and having stamped upon its as yet infantile features the ineradicable birth-mark: "The rights of man." For fifty years had France, England, Germany and America been sensible of the pulsations of a new being—Philosophy and Science had conceived it and been its sponsors at the christening. Not, however, that in germinal force it had not existed earlier, for had not Copernicus, Keppler, Galileo and Newton already lived and offered to the world divine gifts? But till now, as of the words of the great moral teacher of an earlier age, "The ears of men were deaf, that they might not hear;" or, as expressed by Carlyle, "Of a truth the long demonstrated will now be done, the age of revolutions now approaches, but then of happy, blessed ones. Man awakens from his long somnambulism, chases the phantoms that beleaguered and bewitched him."

THE ETHICAL ELEMENT.

To none more than to the sanitarian is it evident that the ethical element, or "elevation in the scale of being," must ever be the measure of social progress; and hence it is that sanitary reform is intimately associated with the history of religious, political and social development, for our motto, *"Sana mens in corpore sano,"* is but a terse expression of the fact that the science of public health relates to man in every phase of his being. Hence it becomes necessary that we review the social status of the people amongst whom our science took its birth, in order that we may comprehend what progress has been made.

To mathematics, whose development first gave to that oldest study, astrology, a form and meaning, stripping it of its mysteries, and enabling men to establish the first truth of science, viz., the unalterable character of the laws which govern the universe and guide the planets in their course, are we to look for the first evidences of that intellectual development which marked the Renaissance. As a part of it began those experiments in physics or natural philosophy which especially marked the genius of Galileo, and gave us some of the first crude scientific instruments, making deeper physical investigations possible. Slowly, indeed, were the swaddling bands of astrology and divination cast off, and the reign of natural law inaugurated. But Bacon, with his marvellous powers, had instituted the inductive method, and pressed forward the idea of a scientific society which might give prestige to the

work of original experiment, which resulted in the Royal Society of England being founded in 1649. By it first were published those discoveries of Newton which made the extension of his marvellous investigations possible to students on the Continent. Their supreme importance may be judged from the fact that in France we find that the greatest scholars among the Encyclopedists were all mathematicians, and that D'Alembert, Lagrange, Helvetius and others won their membership in the Academy of Sciences by theses on some subject of natural science. But with the foundation built on which the superstructure of science became possible, we find the spirit of investigation spreading into every field, and though Editor Diderot saw volume after volume of his encyclopædia seized under royal interdict, yet after years he saw them published even with royal sanction, since in them the king found described the method of making gunpowder, and the royal mistress the method of making rouge and manufacturing silks. So it came to pass that this marvellous work of twenty-one volumes became a potent agency in developing the spirit of the New Age over both Europe and America. To it D'Alembert, Helvetius, Turgot, Buffon, Condorcet, Marmontel, Rousseau and St. Lambert were all contributors, while towering above them was "Patriarch" Voltaire, as he was affectionately called, and of whom, as philosopher, litterateur, poet and politician, Carlyle has said: "So far as present knowledge enables us to judge, it may be said that to abstract Voltaire and his activity from the eighteenth century were to produce a greater difference in the existing figure of things (1829) than the want of any other up to this day." Indeed, the then thirst for knowledge may be said to have become a universal passion, and it is stated that at this time the sale of books in Paris was four times as great as in London. Remembering, as Lecky writes, that, "in France absolute monarchy had destroyed all liberty and all opposition, and having prevented a school of practical reformers, politics came to be treated like a problem in geometry or ethics, to be worked out on general principles with a complete disregard to the traditions and the special circumstances of the nation," it is little wonder that Rousseau's "Contrat Social" came to be looked upon as a new gospel, and for the influence it exerted we must class it with Adam Smith's "Wealth of Nations." How could it be otherwise when it set forth what were then new ideas, but to us now mere axioms?—That (*a*) society originally was formed for the protection of the lives and property of those composing it;

(*b*) that to live in peace and security was the right of individuals; (*c*) to this end certain organizations and laws were necessary; (*d*) that as to do this costs money equalized taxation was necessary and majorities should rule. The outcome of such teachings to a people to whom science was revealing the marvellous secrets of nature and teaching a uniformity of laws and the dominance of intellect is obvious. Of that ever-memorable 4th May, 1789, when Versailles saw the Convocation of the States-General, which had not met since 1614, in a country where existed "no Habeas Corpus Act, no liberty of the press, no legalized religious liberty, no trial by jury, and no national representation," Carlyle says: "It is the baptism day of Democracy—sick Time has given it birth, the numbered months being run—the 'extreme unction' day of Feudalism; a superannuated society, decrepit with toils * * * is now to die; and so, with death-throes and birth-throes, a new one is to be born." Amidst all the horrors of that revolution, which advanced with lightning rapidity, there is to be observed the influences that preceded the Renaissance, regarding which Talleyrand remarked: "He who did not live before 1789 has never known the charm of life." As expressed by Lecky: "The study of physiology, botany, comparative anatomy, and electricity advanced with gigantic strides; and in the enthusiasm which prevailed it was imagined that physical science would soon unlock the secret of the universe and disclose the mystery of life."

Lavoisier laid the basis of the science of chemistry, and Fourcroy, by popular lectures, made its study fashionable. Petit taught anatomy, Nollet electricity, and Arago astronomy; while Laplace, in his "Celeste Mechanique," gave to the world his nebular hypothesis, which at the end of this century still stands for us as a working theory of the evolution of the universe. And even though Mongolfier excited the wonder of the people by his balloons, and Mesmer cloaked a scientific fact with charlatanism, while Count Alessandro di Cagliostro, "by profession a healer of diseases, abolisher of wrinkles, friend of the poor and impotent, grand master of the Egyptian Lodge of High Science, spirit-summoner, gold-cook, Grand Cophta, prophet, priest and thaumaturgic moralist and swindler," exploited the ladies of three courts, only to come to grief at last over the theft of the diamond necklace, yet there is the imminent fact that in the councils of this period of

trom ferment, when so many noble men were sucked into the

there was a galaxy of earnest spirits filled with a love of

truth, greater probably than was ever before gathered in the parliament of any nation. It was as the Golden Age of Greece in art, or the glories in literature of the Elizabethan period—Tourgot, writer on economics, was Minister of Finance; Helvetius, the mathematician, was Director of Forests and Farms, and developed scientific agriculture. Laplace was a Secretary of State, under the National Convention, while Lavoisier, whom the German Wurtz has called the "father of French chemistry," was, in the words of Lalonde, "to be found everywhere"—and with what good reason amongst a people where the search after scientific truth was at fever heat in every department of life. It was as when the prisoner comes from the close dungeon into the free air of heaven—he breathes deeply and again for fear he may lose it. The situation is epitomized in the life of Lavoisier, a model of what the man of science may and ought to be. Born in 1743, of wealthy tradespeople, he had all the early advantages of the schools of his time, and studied mathematics, astronomy and botany assiduously, and became so absorbed in natural philosophy that at twenty-three years of age he gained the gold medal of the Academy of Sciences for a thesis on "Lighting of the Streets of Paris." He analyzed gypsum, and is soon found touring France with Guellard, and making a geological map, subsequently publishing "Memoires surcouches des Montagnes." At twenty-six years of age he was made one of the Farmers-General, in order that his resources for advancing scientific study might be increased. Imagine such a possibility to-day! He soon overtook the pneumatic studies of Black, Cavendish and Priestley, checked their errors and added to and gave form to their studies on air. Weekly experimental laboratory reviews of work done were carried on by him with Laplace, Mayer, Berthollet and Fourcroy. In 1778 he gave to Priestley's dephlogisticated air the name of oxygen, meaning thereby the acidifying principle; in 1781 synthesized carbonic acid; in 1784 analyzed water, thereby making first advance toward the analysis of organic substances, and in 1787 published "Methode de Nomenclature Chemique," a system of nomenclature which lasted for fifty years, and is the basis of that still in use. In social reform, as a Farmer-General, he succeeded in having many oppressive taxes of the people removed, even from the Jews of Metz. In 1776 he was made director of powder-works by Turgot, soon quadrupled the output and improved by one-third its explosive power. It was Lavoisier who made the chemical balance the ultimate ratio, and

hence established the basis of quantitative analysis. He analyzed soils and manures, and even doubled the product of his own farm. In 1787 he was the philosophical statesman of the Provincial Assembly of Orleanais. In 1789 he reported to the National Assembly on "Caisse d'Escompte," and in 1790 sat on "The Commission of Weights and Measures;" while in 1791, as Commissioner of the Treasury, he established a system of accounts hitherto unequalled, and soon was asked to write a treatise on taxation, and wrote "De la Richesse Territoriale de la France." And now the political eclipse: on the 2d May, 1794, Dupin, in the National Convention, brought some frivolous charge against Lavoisier, and six days afterward he, with twenty-seven others, went to the guillotine, the brutal reply to a petition for a reprieve being: "The republic has no need for savants." Well were it for progress if the words of Lagrange, regarding Lavoisier, were writ large everywhere in these days of political bouleversements: *"Il ne leur a fallu qu'un moment pour faire tomber cette tête, et cent années peutêtre ne souffront pas pour en reproduire une semblable."*

But enough has been said to fully illustrate those widespread intellectual and scientific movements which, springing up so largely in France, spread even to the imperial courts of Germany and Italy and to the autocratic throne of the Czars, and which laid the basis of the marvellous progress in practical science of the nineteenth century. Nor must it be supposed that these influences were extended only to the progress of the pure sciences. Foundling and Magdalen hospitals were founded; Abbé de l'Épée invented an alphabet for the blind, and Houay founded an institution for the deaf and dumb, and asylums for insane were opened, while Frederick the Great made education almost compulsory in Prussia.

PRACTICAL SOCIAL NEEDS.

To England must we now look and briefly examine a current of influence, arising from allied but different causes, and productive of a social progress based, perhaps, upon a less exact intellectual and scientific foundation, and more upon what may be called the practical social needs of a people. The deep-laid religious convictions of their ancestors who, in a previous century, had struggled for religious and political freedom at a time when France was under an absolute despotism, and which culminated in the civil war and the Commonwealth under Cromwell, and the subsequent Revolution of 1688, with the establishment of a new dynasty on

the throne, had never been lost or seriously dissipated, especially among the agricultural and industrial classes, whether of England or her great colonies in America. It is true that the parties of the early part of the eighteenth century exhibited every shade of political corruption; but the idea of the liberty of the subject and of the constitutional limitations of the crown, growing out of the Witanagemot of the old Saxons, was never lost, while the growth of colonies and of sea-going commerce kept alive a spirit of enterprise and independence of thought which received added strength from the marvellous industrial progress of the latter half of the eighteenth century, due to the mechanical inventions which gave England that financial prominence that has marked her course through the nineteenth century. The French intellectualism of the Renaissance found a congenial soil for its growth among the descendants of the Pilgrim Fathers and Virginian descendants of those emigrants who for two centuries had breathed the free air of a new world, while the outcome of the War of Independence gave to a decadent Toryism in England its *coup-de-grace.*

Such were the influences which enabled the younger Pitt, at twenty-five years of age Premier of England, surrounded by men of unusual intellectual strength, to carry England safely through the trying years of the French Revolution and the Napoleonic wars, while the world was taught very many lessons of what a people once in thraldom may become and do when, imbued by the broad truths of the "Contrat Social" and the "Rights of Man," they strike for individual and national freedom. England had, with the growth of the colonies and the founding of the new empire in India, been developing her commerce during the reign of the first Georges; but this progress became rapidly accelerated from 1750 onward, owing to several remarkable mechanical inventions in manufacturing machinery. Of these the inventions for the manufacture of cotton goods were the greatest in their immediate results. The stories have often been told of how Hargreaves invented the spinning-jenny, and how Arkwright increased many times over, by the use of rollers, the amount of yarn made; and of how Cartwright made the power loom, the cylinder presses for printing cotton goods, have all been told again and again, while the improvements of Watt, once a Scotch watchmaker, in the steam engine, making it almost the very machine we see to-day, enabled Arkwright to run his machines by steam, and Engineer Rennie set the wheels of the great flour mills of London revolving by the

same agency. If to these we add the improvements made in the manufacture of iron and the extension of the use of coal, and the construction in a few years of miles of canals, making cheap transportation possible, we may understand some of the principal influences which gave a pre-eminence to England in commerce while entirely altering her internal economic conditions and her foreign policy. Manchester, Liverpool and Glasgow sprang from small towns into cities, and agricultural England, by the end of the century, had become a country of large urban populations, with mercantile fleets upon every ocean. Indian nabobs returned home to spend their millions of rupees, and with the rise of wages were begotten higher modes of living, associated with a sense of educational needs, all stimulated by the intellectual Renaissance on the Continent. What this industrial expansion means may be gathered from the fact that within the forty years up to 1840, the number of those engaged in the cotton manufacture in England had risen from 80,000 to 833,000, while the population of Lancashire alone during the eighteenth century rose from 166,200 to 672,000. Today it is over 4,000,000.

To these causes, so briefly summarized, are we to look for the beginnings of what we now call State medicine, of which England has during the nineteenth century been the most fruitful field. Up to the end of the century the sudden expansion of her foreign trade, owing to these discoveries and the high prices consequent upon the Napoleonic wars, created such high rates of wages and so great general prosperity that the sanitary evils which were rapidly growing up with the development of the factory system were as yet hardly noticed. But the escape from a national calamity, such as had overtaken France in the Revolution, had accelerated what is called the "evangelical movements," so large a factor in educating the national conscience in England to a sense of the truth of the Scripture that "a man is his brother's keeper." Associated with the younger Pitt, the model of the domestic statesman, as a personal friend, was William Wilberforce, whose broad Christianity and practical common-sense served to make him the first social reformer whose energies as a legislator were definitely devoted to the amelioration of the condition of his fellow-men, while supported outside by the "Society for the Abolition of the Slave Trade," amongst whom the Quakers were the most active, public meetings were held and statistics were carefully collected to show the inevitable horrors of the traffic. Wilberforce presented, in

1788, no less than thirteen petitions to Parliament praying for its abolition, and the first steps were taken in that year to mitigate the horrors of the ocean passage; but the opposition was great and the fight prolonged. But that strong practical conscience of England, which time and again has forced Parliament to act, as in the Reform Bill of 1831, and the repeal of the Corn Laws in 1846, had been aroused; and the people proved their sincerity by multitudes refusing to use sugar, as being a product of slave labor. This education of the public conscience by public meetings was now for the first time becoming a normal instrument of politics, and of such influence under popular government we, in our day, are fully convinced.

JOHN HOWARD—PRISON SANITATION.

This anti-slavery crusade was but another phase of a work which may be looked upon almost as the first attempt at sanitary reform, viz., the investigation of the prisons of England and the Continent by John Howard. First captured at sea in 1756 by a privateer and sent to a French prison, he had personal experience of the abuses which existed; and in 1753, as High Sheriff of Bedfordshire, he had ample opportunities of studying the prisoners under his charge. Till his death, in 1790, prison reform became his life-work, and to Britain and the countries of Europe he revealed a mass of maladministration and atrocious treatment which made the most indifferent assume an interest. Insufficient food and starvation only prevented by private charity, no sewers, no infirmaries, and no means of warming prisoners, and almost no water was, as a rule, to be found; while prisoners were crowded "in dark, subterranean dungeons, reeking with pestilential effluvia." In most prisons there was no allowance for bedding or straw to lie on, and even if obtained it was not changed for months. There was almost no ventilation, owing to the window tax; and so vile was the air "that Howard declared that after visiting the prisons his clothes were so impregnated that he could not bear to drive in a post-chaise with closed windows." Naturally, in such a place human life rapidly withered, and scurvy was deadly, while typhus, called gaol fever, raged with such virulence that more prisoners died from it than from the gallows; while if discharged they became sources of contagion wherever they went. Many jails were private property, and here, as in too many public ones, evils of even a grosser kind prevailed, for chains, iron collars and even iron bars, removed by brutal jailers only for bribes, were in use, while lunatics were often added, making pandemonium of Tartarus. Old and young, male and fe-

male, were indiscriminately huddled together, and prisons for punishment became schools of vice. Such conditions seem to have been worse in England than in some other countries, as Holland and Switzerland, where Howard was told that jail fever did not exist. Though Pitt recognized the evils and need of reform, as pointed out by Howard, but little was accomplished till the time of the great reforms in the third decade of the nineteenth century. Reference has been made to the great and rapid development of factories, and the aggregation in towns of a population once largely rural. One of the greatest evils resulting from this was the employment of cheap child labor, so many men being drafted away to the Continental wars. Indeed, so completely did the great Pitt misconceive the situation, that in speaking about the laboring classes he pointed out how much was got from the industry of children and the advantage of employing them at an early age. Indeed, many were sent out at ages of from six to ten years, from workhouses, and contracted for, commonly working in factories from twelve to even sixteen hours daily, as was proved by Parliamentary inquiry. Curiously, as a result of this industrial development, there took place the immense increase of negro slavery in America which, as pointed out by John W. Daniel, of Virginia, in his famous oration on Jefferson Davis, had been protested against in 1727 by South Carolina, and prohibited by law in Georgia, in 1760, while Virginia taxed every owner $10 per slave. Indeed, as remarked by Lecky, it seemed, at the time of Washington, "likely to be extinguished by an easy and natural process." How slow, in the face of the growing influence of the great centres of manufacture in England, was the growth of factory acts and public health legislation we shall see as we trace the progress of the nineteenth century.

As regards the evolution and progress of public health during the present century, there would seem to be four periods more or less distinctly marking its growth and that of those sciences which form component parts of it. These are: (1) the period of investigation, extending to about 1830; (2) the period of agitation, extending to 1850; (3) the period of legislation, to 1875; (4) the period of elaboration and development. We shall refer briefly to each of

E PERIOD OF INVESTIGATION.

of the century is notable because of the estab- of the Royal Institution, originally conceived for the benefit of the poor. This institution upon the interest of this association, since its

foundation was due to the efforts of Benjamin Thompson, a Royalist American, who, going to Europe after the Revolution, had engaged in various services in different countries. His labors were in the field of philanthropy, where he specially endeavored to have science applied to domestic economy, and especially for having cheap foods supplied for the needs of the poor in London and other large cities. It was intended to institute a system of popular lectures in order that a practical knowledge of inventions, and of the means of obtaining the comforts and conveniences of life, might be rapidly diffused. Humphrey Davy, then a budding natural philosopher, was fortunately appointed first lecturer on chemistry, and succeeded in a remarkable way in interesting the public in his discoveries, and in popularizing science in England. A lecturer of marvellous power, he traced out in the introductory lecture of 1802 the resources of science for humanity, and dwelt upon its dignity and nobility as a pursuit, and upon its value as a moral and educational force. The lecture created a sensation, Davy became the lion of fashionable society, and for thirteen continuous seasons gave lectures on many and most varied subjects, from "laughing gas" to the constituents of artificial manures for agricultural purposes. But most to be remembered is that invention—the miner's safety lamp—the result of a few months' experiment which he had undertaken at the request of those specially interested in coal-mining. Seldom if ever has the sanitary value of a single invention been so quickly appreciated, and its benefits so strikingly illustrated; and yet when asked to patent the discovery, Davy wrote: "I never thought of such a thing; my sole object was to serve the cause of humanity." In addition to the number of splendid workers whom Lavoisier left behind him in Paris, as Laplace, Fourcroy, Guyton de Morveau, Gay-Lussac, Berthollet and Humboldt, England possessed other investigators, who, if not popularizing science, were perhaps adding, even more than Davy, to what has proved of extended permanent value. Of these, was the scholarly physician and conscientious investigator, Dr. Wollaston, who, regardless of money, devoted himself, in 1801, to pure chemistry, and was among the first to begin its application to physiology. He made platinum invaluable and gave us the theory of chemical equivalents, dipped into electricity, and came to be regarded as the greatest master of pure chemistry of his time. He died in 1828. Alongside his work must be placed that of the Quaker schoolmaster, Robert Dalton, since his work was especially in that branch which we now call chemical physics. He has been called the father of modern me-

say that though its advent was marked by portents, agonies and birth throes, yet there it stood, an indubitable fact, with infinite potentialities, and having stamped upon its as yet infantile features the ineradicable birth-mark: "The rights of man." For fifty years had France, England, Germany and America been sensible of the pulsations of a new being—Philosophy and Science had conceived it and been its sponsors at the christening. Not, however, that in germinal force it had not existed earlier, for had not Copernicus, Keppler, Galileo and Newton already lived and offered to the world divine gifts? But till now, as of the words of the great moral teacher of an earlier age, "The ears of men were deaf, that they might not hear;" or, as expressed by Carlyle, "Of a truth the long demonstrated will now be done, the age of revolutions now approaches, but then of happy, blessed ones. Man awakens from his long somnambulism, chases the phantoms that beleaguered and bewitched him."

THE ETHICAL ELEMENT.

To none more than to the sanitarian is it evident that the ethical element, or "elevation in the scale of being," must ever be the measure of social progress; and hence it is that sanitary reform is intimately associated with the history of religious, political and social development, for our motto, *"Sana mens in corpore sano,"* is but a terse expression of the fact that the science of public health relates to man in every phase of his being. Hence it becomes necessary that we review the social status of the people amongst whom our science took its birth, in order that we may comprehend what progress has been made.

To mathematics, whose development first gave to that oldest study, astrology, a form and meaning, stripping it of its mysteries, and enabling men to establish the first truth of science, viz., the unalterable character of the laws which govern the universe and guide the planets in their course, are we to look for the first evidences of that intellectual development which marked the Renaissance. As a part of it began those experiments in physics or natural philosophy which especially marked the genius of Galileo, and gave us some of the first crude scientific instruments, making deeper physical investigations possible. Slowly, indeed, were the swaddling bands of astrology and divination cast off, and the reign of natural law inaugurated. But Bacon, with his marvellous powers, had instituted the inductive method, and pressed forward the idea of a scientific society which might give prestige to the

work of original experiment, which resulted in the Royal Society of England being founded in 1649. By it first were published those discoveries of Newton which made the extension of his marvellous investigations possible to students on the Continent. Their supreme importance may be judged from the fact that in France we find that the greatest scholars among the Encyclopedists were all mathematicians, and that D'Alembert, Lagrange, Helvetius and others won their membership in the Academy of Sciences by theses on some subject of natural science. But with the foundation built on which the superstructure of science became possible, we find the spirit of investigation spreading into every field, and though Editor Diderot saw volume after volume of his encyclopædia seized under royal interdict, yet after years he saw them published even with royal sanction, since in them the king found described the method of making gunpowder, and the royal mistress the method of making rouge and manufacturing silks. So it came to pass that this marvellous work of twenty-one volumes became a potent agency in developing the spirit of the New Age over both Europe and America. To it D'Alembert, Helvetius, Turgot, Buffon, Condorcet, Marmontel, Rousseau and St. Lambert were all contributors, while towering above them was "Patriarch" Voltaire, as he was affectionately called, and of whom, as philosopher, litterateur, poet and politician, Carlyle has said: "So far as present knowledge enables us to judge, it may be said that to abstract Voltaire and his activity from the eighteenth century were to produce a greater difference in the existing figure of things (1829) than the want of any other up to this day." Indeed, the then thirst for knowledge may be said to have become a universal passion, and it is stated that at this time the sale of books in Paris was four times as great as in London. Remembering, as Lecky writes, that, "in France absolute monarchy had destroyed all liberty and all opposition, and having prevented a school of practical reformers, politics came to be treated like a problem in geometry or ethics, to be worked out on general principles with a complete disregard to the traditions and the special circumstances of the nation," it is little wonder that Rousseau's "Contrat Social" came to be looked upon as a new gospel, and for the influence it exerted we must class it with Adam Smith's "Wealth of Nations." How could it be otherwise when it set forth what were then new ideas, but to us now mere axioms?—That (*a*) society originally was formed for the protection of the lives and property of those composing it;

(*b*) that to live in peace and security was the right of individuals; (*c*) to this end certain organizations and laws were necessary; (*d*) that as to do this costs money equalized taxation was necessary and majorities should rule. The outcome of such teachings to a people to whom science was revealing the marvellous secrets of nature and teaching a uniformity of laws and the dominance of intellect is obvious. Of that ever-memorable 4th May, 1789, when Versailles saw the Convocation of the States-General, which had not met since 1614, in a country where existed "no Habeas Corpus Act, no liberty of the press, no legalized religious liberty, no trial by jury, and no national representation," Carlyle says: "It is the baptism day of Democracy—sick Time has given it birth, the numbered months being run—the 'extreme unction' day of Feudalism; a superannuated society, decrepit with toils * * * is now to die; and so, with death-throes and birth-throes, a new one is to be born." Amidst all the horrors of that revolution, which advanced with lightning rapidity, there is to be observed the influences that preceded the Renaissance, regarding which Talleyrand remarked: "He who did not live before 1789 has never known the charm of life." As expressed by Lecky: "The study of physiology, botany, comparative anatomy, and electricity advanced with gigantic strides; and in the enthusiasm which prevailed it was imagined that physical science would soon unlock the secret of the universe and disclose the mystery of life."

Lavoisier laid the basis of the science of chemistry, and Fourcroy, by popular lectures, made its study fashionable. Petit taught anatomy, Nollet electricity, and Arago astronomy; while Laplace, in his "Celeste Mechanique," gave to the world his nebular hypothesis, which at the end of this century still stands for us as a working theory of the evolution of the universe. And even though Mongolfier excited the wonder of the people by his balloons, and Mesmer cloaked a scientific fact with charlatanism, while Count Alessandro di Cagliostro, "by profession a healer of diseases, abolisher of wrinkles, friend of the poor and impotent, grand master of the Egyptian Lodge of High Science, spirit-summoner, gold-cook, Grand Cophta, prophet, priest and thaumaturgic moralist and swindler," exploited the ladies of three courts, only to come to grief at last over the theft of the diamond necklace, yet there is the imminent fact that in the councils of this period of maelstrom ferment, when so many noble men were sucked into the vortex, there was a galaxy of earnest spirits filled with a love of

truth, greater probably than was ever before gathered in the parliament of any nation. It was as the Golden Age of Greece in art, or the glories in literature of the Elizabethan period—Tourgot, writer on economics, was Minister of Finance; Helvetius, the mathematician, was Director of Forests and Farms, and developed scientific agriculture. Laplace was a Secretary of State, under the National Convention, while Lavoisier, whom the German Wurtz has called the "father of French chemistry," was, in the words of Lalonde, "to be found everywhere"—and with what good reason amongst a people where the search after scientific truth was at fever heat in every department of life. It was as when the prisoner comes from the close dungeon into the free air of heaven—he breathes deeply and again for fear he may lose it. The situation is epitomized in the life of Lavoisier, a model of what the man of science may and ought to be. Born in 1743, of wealthy tradespeople, he had all the early advantages of the schools of his time, and studied mathematics, astronomy and botany assiduously, and became so absorbed in natural philosophy that at twenty-three years of age he gained the gold medal of the Academy of Sciences for a thesis on "Lighting of the Streets of Paris." He analyzed gypsum, and is soon found touring France with Guellard, and making a geological map, subsequently publishing "Memoires surcouches des Montagnes." At twenty-six years of age he was made one of the Farmers-General, in order that his resources for advancing scientific study might be increased. Imagine such a possibility to-day! He soon overtook the pneumatic studies of Black, Cavendish and Priestley, checked their errors and added to and gave form to their studies on air. Weekly experimental laboratory reviews of work done were carried on by him with Laplace, Mayer, Berthollet and Fourcroy. In 1778 he gave to Priestley's dephlogisticated air the name of oxygen, meaning thereby the acidifying principle; in 1781 synthesized carbonic acid; in 1784 analyzed water, thereby making first advance toward the analysis of organic substances, and in 1787 published "Methode de Nomenclature Chemique," a system of nomenclature which lasted for fifty years, and is the basis of that still in use. In social reform, as a Farmer-General, he succeeded in having many oppressive taxes of the people removed, even from the Jews of Metz. In 1776 he was made director of powder-works by Turgot, soon quadrupled the output and improved by one-third its explosive power. It was Lavoisier who made the chemical balance the ultimate ratio, and

hence established the basis of quantitative analysis. He analyzed soils and manures, and even doubled the product of his own farm. In 1787 he was the philosophical statesman of the Provincial Assembly of Orleanais. In 1789 he reported to the National Assembly on "Caisse d'Escompte," and in 1790 sat on "The Commission of Weights and Measures;" while in 1791, as Commissioner of the Treasury, he established a system of accounts hitherto unequalled, and soon was asked to write a treatise on taxation, and wrote "De la Richesse Territoriale de la France." And now the political eclipse: on the 2d May, 1794, Dupin, in the National Convention, brought some frivolous charge against Lavoisier, and six days afterward he, with twenty-seven others, went to the guillotine, the brutal reply to a petition for a reprieve being: "The republic has no need for savants." Well were it for progress if the words of Lagrange, regarding Lavoisier, were writ large everywhere in these days of political bouleversements: *"Il ne leur a fallu qu'un moment pour faire tomber cette tête, et cent années peutêtre ne souffront pas pour en reproduire une semblable."*

But enough has been said to fully illustrate those widespread intellectual and scientific movements which, springing up so largely in France, spread even to the imperial courts of Germany and Italy and to the autocratic throne of the Czars, and which laid the basis of the marvellous progress in practical science of the nineteenth century. Nor must it be supposed that these influences were extended only to the progress of the pure sciences. Foundling and Magdalen hospitals were founded; Abbé de l'Épée invented an alphabet for the blind, and Houay founded an institution for the deaf and dumb, and asylums for insane were opened, while Frederick the Great made education almost compulsory in Prussia.

PRACTICAL SOCIAL NEEDS.

To England must we now look and briefly examine a current of influence, arising from allied but different causes, and productive of a social progress based, perhaps, upon a less exact intellectual and scientific foundation, and more upon what may be called the practical social needs of a people. The deep-laid religious convictions of their ancestors who, in a previous century, had struggled for religious and political freedom at a time when France was under an absolute despotism, and which culminated in the civil war and the Commonwealth under Cromwell, and the subsequent Revolution of 1688, with the establishment of a new dynasty on

the throne, had never been lost or seriously dissipated, especially among the agricultural and industrial classes, whether of England or her great colonies in America. It is true that the parties of the early part of the eighteenth century exhibited every shade of political corruption; but the idea of the liberty of the subject and of the constitutional limitations of the crown, growing out of the Witanagemot of the old Saxons, was never lost, while the growth of colonies and of sea-going commerce kept alive a spirit of enterprise and independence of thought which received added strength from the marvellous industrial progress of the latter half of the eighteenth century, due to the mechanical inventions which gave England that financial prominence that has marked her course through the nineteenth century. The French intellectualism of the Renaissance found a congenial soil for its growth among the descendants of the Pilgrim Fathers and Virginian descendants of those emigrants who for two centuries had breathed the free air of a new world, while the outcome of the War of Independence gave to a decadent Toryism in England its *coup-de-grace.*

Such were the influences which enabled the younger Pitt, at twenty-five years of age Premier of England, surrounded by men of unusual intellectual strength, to carry England safely through the trying years of the French Revolution and the Napoleonic wars, while the world was taught very many lessons of what a people once in thraldom may become and do when, imbued by the broad truths of the "Contrat Social" and the "Rights of Man," they strike for individual and national freedom. England had, with the growth of the colonies and the founding of the new empire in India, been developing her commerce during the reign of the first Georges; but this progress became rapidly accelerated from 1750 onward, owing to several remarkable mechanical inventions in manufacturing machinery. Of these the inventions for the manufacture of cotton goods were the greatest in their immediate results. The stories have often been told of how Hargreaves invented the spinning-jenny, and how Arkwright increased many times over, by the use of rollers, the amount of yarn made; and of how Cartwright made the power loom, the cylinder presses for printing cotton goods, have all been told again and again, while the improvements of Watt, once a Scotch watchmaker, in the steam engine, making it almost the very machine we see to-day, enabled Arkwright to run his machines by steam, and Engineer Rennie set the wheels of the great flour mills of London revolving by the

same agency. If to these we add the improvements made in the manufacture of iron and the extension of the use of coal, and the construction in a few years of miles of canals, making cheap transportation possible, we may understand some of the principal influences which gave a pre-eminence to England in commerce while entirely altering her internal economic conditions and her foreign policy. Manchester, Liverpool and Glasgow sprang from small towns into cities, and agricultural England, by the end of the century, had become a country of large urban populations, with mercantile fleets upon every ocean. Indian nabobs returned home to spend their millions of rupees, and with the rise of wages were begotten higher modes of living, associated with a sense of educational needs, all stimulated by the intellectual Renaissance on the Continent. What this industrial expansion means may be gathered from the fact that within the forty years up to 1840, the number of those engaged in the cotton manufacture in England had risen from 80,000 to 833,000, while the population of Lancashire alone during the eighteenth century rose from 166,200 to 672,000. Today it is over 4,000,000.

To these causes, so briefly summarized, are we to look for the beginnings of what we now call State medicine, of which England has during the nineteenth century been the most fruitful field. Up to the end of the century the sudden expansion of her foreign trade, owing to these discoveries and the high prices consequent upon the Napoleonic wars, created such high rates of wages and so great general prosperity that the sanitary evils which were rapidly growing up with the development of the factory system were as yet hardly noticed. But the escape from a national calamity, such as had overtaken France in the Revolution, had accelerated what is called the "evangelical movements," so large a factor in educating the national conscience in England to a sense of the truth of the Scripture that "a man is his brother's keeper." Associated with the younger Pitt, the model of the domestic statesman, as a personal friend, was William Wilberforce, whose broad Christianity and practical common-sense served to make him the first social reformer whose energies as a legislator were definitely devoted to the amelioration of the condition of his fellow-men, while supported outside by the "Society for the Abolition of the Slave Trade," amongst whom the Quakers were the most active, public meetings were held and statistics were carefully collected to show the inevitable horrors of the traffic. Wilberforce presented, in

1788, no less than thirteen petitions to Parliament praying for its abolition, and the first steps were taken in that year to mitigate the horrors of the ocean passage; but the opposition was great and the fight prolonged. But that strong practical conscience of England, which time and again has forced Parliament to act, as in the Reform Bill of 1831, and the repeal of the Corn Laws in 1846, had been aroused; and the people proved their sincerity by multitudes refusing to use sugar, as being a product of slave labor. This education of the public conscience by public meetings was now for the first time becoming a normal instrument of politics, and of such influence under popular government we, in our day, are fully convinced.

JOHN HOWARD—PRISON SANITATION.

This anti-slavery crusade was but another phase of a work which may be looked upon almost as the first attempt at sanitary reform, viz., the investigation of the prisons of England and the Continent by John Howard. First captured at sea in 1756 by a privateer and sent to a French prison, he had personal experience of the abuses which existed; and in 1753, as High Sheriff of Bedfordshire, he had ample opportunities of studying the prisoners under his charge. Till his death, in 1790, prison reform became his life-work, and to Britain and the countries of Europe he revealed a mass of maladministration and atrocious treatment which made the most indifferent assume an interest. Insufficient food and starvation only prevented by private charity, no sewers, no infirmaries, and no means of warming prisoners, and almost no water was, as a rule, to be found; while prisoners were crowded "in dark, subterranean dungeons, reeking with pestilential effluvia." In most prisons there was no allowance for bedding or straw to lie on, and even if obtained it was not changed for months. There was almost no ventilation, owing to the window tax; and so vile was the air "that Howard declared that after visiting the prisons his clothes were so impregnated that he could not bear to drive in a post-chaise with closed windows." Naturally, in such a place human life rapidly withered, and scurvy was deadly, while typhus, called gaol fever, raged with such virulence that more prisoners died from it than from the gallows; while if discharged they became sources of contagion wherever they went. Many jails were private property, and here, as in too many public ones, evils of even a grosser kind prevailed, for chains, iron collars and even iron bars, removed by brutal jailers only for bribes, were in use, while lunatics were often added, making pandemonium of Tartarus. Old and young, male and fe-

male, were indiscriminately huddled together, and prisons for punishment became schools of vice. Such conditions seem to have been worse in England than in some other countries, as Holland and Switzerland, where Howard was told that jail fever did not exist. Though Pitt recognized the evils and need of reform, as pointed out by Howard, but little was accomplished till the time of the great reforms in the third decade of the nineteenth century. Reference has been made to the great and rapid development of factories, and the aggregation in towns of a population once largely rural. One of the greatest evils resulting from this was the employment of cheap child labor, so many men being drafted away to the Continental wars. Indeed, so completely did the great Pitt misconceive the situation, that in speaking about the laboring classes he pointed out how much was got from the industry of children and the advantage of employing them at an early age. Indeed, many were sent out at ages of from six to ten years, from workhouses, and contracted for, commonly working in factories from twelve to even sixteen hours daily, as was proved by Parliamentary inquiry. Curiously, as a result of this industrial development, there took place the immense increase of negro slavery in America which, as pointed out by John W. Daniel, of Virginia, in his famous oration on Jefferson Davis, had been protested against in 1727 by South Carolina, and prohibited by law in Georgia, in 1760, while Virginia taxed every owner $10 per slave. Indeed, as remarked by Lecky, it seemed, at the time of Washington, "likely to be extinguished by an easy and natural process." How slow, in the face of the growing influence of the great centres of manufacture in England, was the growth of factory acts and public health legislation we shall see as we trace the progress of the nineteenth century.

As regards the evolution and progress of public health during the present century, there would seem to be four periods more or less distinctly marking its growth and that of those sciences which form component parts of it. These are: (1) the period of investigation, extending to about 1830; (2) the period of agitation, extending to 1850; (3) the period of legislation, to 1875; (4) the period of elaboration and development. We shall refer briefly to each of these.

THE PERIOD OF INVESTIGATION.

The opening year of the century is notable because of the establishment in London of the Royal Institution, originally conceived as an establishment for the benefit of the poor. This institution [illegible]pecial claim upon the interest of this association, since its

foundation was due to the efforts of Benjamin Thompson, a Royalist American, who, going to Europe after the Revolution, had engaged in various services in different countries. His labors were in the field of philanthropy, where he specially endeavored to have science applied to domestic economy, and especially for having cheap foods supplied for the needs of the poor in London and other large cities. It was intended to institute a system of popular lectures in order that a practical knowledge of inventions, and of the means of obtaining the comforts and conveniences of life, might be rapidly diffused. Humphrey Davy, then a budding natural philosopher, was fortunately appointed first lecturer on chemistry, and succeeded in a remarkable way in interesting the public in his discoveries, and in popularizing science in England. A lecturer of marvellous power, he traced out in the introductory lecture of 1802 the resources of science for humanity, and dwelt upon its dignity and nobility as a pursuit, and upon its value as a moral and educational force. The lecture created a sensation, Davy became the lion of fashionable society, and for thirteen continuous seasons gave lectures on many and most varied subjects, from "laughing gas" to the constituents of artificial manures for agricultural purposes. But most to be remembered is that invention—the miner's safety lamp—the result of a few months' experiment which he had undertaken at the request of those specially interested in coal-mining. Seldom if ever has the sanitary value of a single invention been so quickly appreciated, and its benefits so strikingly illustrated; and yet when asked to patent the discovery, Davy wrote: "I never thought of such a thing; my sole object was to serve the cause of humanity." In addition to the number of splendid workers whom Lavoisier left behind him in Paris, as Laplace, Fourcroy, Guyton de Morveau, Gay-Lussac, Berthollet and Humboldt, England possessed other investigators, who, if not popularizing science, were perhaps adding, even more than Davy, to what has proved of extended permanent value. Of these, was the scholarly physician and conscientious investigator, Dr. Wollaston, who, regardless of money, devoted himself, in 1801, to pure chemistry, and was among the first to begin its application to physiology. He made platinum invaluable and gave us the theory of chemical equivalents, dipped into electricity, and came to be regarded as the greatest master of pure chemistry of his time. He died in 1828. Alongside his work must be placed that of the Quaker schoolmaster, Robert Dalton, since his work was especially in that branch which we now call chemical physics. He has been called the father of modern me-

teorology, and did more to establish the laws on gases or elastic liquids than any one who had preceded him. He it was who first pointed out that aqueous vapor was mechanically combined in the atmosphere, and that each gas therein is subject wholly to its own laws. His experiments on dew and moisture were wholly new, and he gave us the earliest definition of the "Dew Point." He pointed out that fluids could conduct heat as well as convey it by convection, and demonstrated the important fact of heat being produced by mechanical pressure of air, and cold by its rarefaction. He likewise demonstrated that springs owed their origin directly to rain falling on the surface. He established the law of the expansion of gases, and constructed the hydrometer, and proved that the amount of evaporization in any given time was strictly proportionate to the force or pressure of aqueous vapor at the same temperature. His work in this field of pneumatic chemistry first led him to theorize as to the constitution of matter, and to him we owe the first clear conception of the "Atomic Theory" as we find it to-day, but little modified; and taking hydrogen as unity, he determined the weights of many elements and the law of multiple proportions through the constitution of the elements in compound bodies. Questioned and doubted, his discoveries were substantiated, and Davy asserted that the "Atomic Theory" was the greatest discovery of the age, and placed his services to chemistry on a par with those of Keppler to astronomy. His useful life was extended till 1844, and we find in him one of the Nestors of the British Association for the Advancement of Science. In Dr. Thomas Young we have the third of a triad of great men grouped together by the first president of the British Association as making glorious the history of this period of our century. He it was who first established the wave theory of light; he made deep researches in electricity, and was valued for his mechanical knowledge as well as for his knowledge as a physician. Equally celebrated in science, which knows no country, were Berzelius, of Sweden, and Gay-Lussac, Ampere, Volta and Oersted and Arago in France, and Ohm, Seebeck and Becquerel in Germany, whose discoveries only awaited the wizard touch of the Canadian-American, Edison, to cast the rays of the search-light on a whole region whose mysteries had hitherto been concealed. Following the labors of Lavoisier and his associates in France, and of Werner in Germany, but at a later date, this period saw laid the foundations of geological science in England when Mr. William Smith published his map of the strata of England and Wales. Dr. James and Dr. John Playfair had both preceded him in Scotland,

and explaining the past by the present, had appealed to the action of streams and seas and the processes of decay and reconstruction to account for the changes of which the earth's crust bore records. They boldly led the mind back to an illimitable past for an explanation of world-phenomena, and, like Galileo, once more dared the anger of those whose Biblical cosmogony had so long obstructed the rational interpretation of the phenomena of nature. Into the ever-widening field of investigation came Lyell and Sedgewick, Buckland and Murchison, until, in 1830, appeared Lyell's "Principles of Geology," which became for thousands of students an open sesame to Nature's wonders. With students as Buffon and Cuvier in zoölogy, Louis and Dupuytren in medicine and anatomy in France, and Hunter and Jenner in England, it was evident that the *disjecta membra* of science must soon be brought together, when the phenomena of the external world could be utilized to interpret the laws of the physical system of man. At the beginning of the century the medical profession in England was represented by an array of surgeons, physicians and apothecaries, and an array of nondescripts, from tooth-drawers and cutters to barber surgeons, subject to no controlling body and unrecognized by law. In 1815 the Apothecaries' Act was passed prohibiting practising without a license, but excepted the licentiates of the universities of Oxford and Cambridge, of the Royal College of Physicians, and of the Royal College of Surgeons, and henceforth gave a definiteness of direction to medicine in England which had already made the schools of Paris, Vienna and Edinburgh famous, but which, as we learn from Dr. Oliver Wendell Holmes, was long indeed in extending its influence across the ocean to America. What England and her daughter lacked then was what Sir David Brewster, a president of the British Association, lamented as late as 1840, viz.: A national institute wherein men set apart and paid by the nation could devote themselves wholly to the study of science. As neatly expressed by Rev. Mr. Harcourt, the first president of the British Association, in 1831: "The mining field of discovery seems to me to show, on the one part, the ore breaking out on every side, and, on the other, a multitude of hands ready to work it; but no one engaging them to labor or showing them in what manner they may employ their industry to the best advantage." We have already seen how the century opened with a nation awakened into a new life of industry, whether on farm or in factory. The drain of men to the Napoleonic wars, and the constant demand for workers for the arts and manufactures, had supplied abundant labor and high wages in England

for all; but with 1815 came a sudden change in conditions which was first to create a series of conditions of unprecedented misery and discontent, succeeded by social agitations whose outcome none could see, but which were the precursors of that glorious period of reform of which the sanitary improvement of the people formed so important a part. The cotton trade had till 1815, with good prices, steadily developed; but now, fortunately, another great step forward became possible, which, by greatly extending its manufacture, gave employment which lessened the prevailing social misery. The power-loom, hitherto an imperfect success, and machinery for spinning was perfected far beyond the capacity for weaving the yarn into fabrics, while the supply of cotton had been enormously increased by the ingenious invention by Eli Whitney, an American, of the cotton gin. But the Jacquard loom so multiplied production that the looms multiplied from 3,000 in 1815 to 30,000 in 1825, and the output from 82,000,000 to 230,000,000 pounds. On the other hand, some 250,000 hand-loom weavers were being displaced, and ruin and destitution followed. To the discontent caused in this way was to be added that of disbanded soldiers and a farming population, where prices had fallen from 74s. to 43s. per quarter for wheat in three years, while even bread, boots and salt were taxed. As a result, discontent, rioting, destruction of machinery and violence marked the years succeeding the war, while agitation for reform was spread through a growing free press. Luckily, in William Cobbett was found a reformer who was not a revolutionist, and the "Hampden Clubs" urged peaceful methods, and especially workingmen's clubs, and found support even amongst the upper and middle classes. The first step forward was in 1823, when the protective navigation laws were repealed, and in 1826 even the corn laws were modified by the sliding scale, while the introduction of railway legislation in 1823, by which an immense demand for labor and capital was made, seemed further to lessen the miseries of a long commercial and agricultural depression. Already had Fulton steamed his vessel up the Hudson in 1807, and another crossed the Atlantic in 1819; while George Stevenson was giving a practical value to locomotives, of which one had worked on the roads of Paris as early as 1769; and in 1823 there was a charter given for the first railroad, forty miles long, built by Stevenson and operated by an engine essentially the same as that of to-day. With such era-making inventions marking the progress of science and the diffusion of knowledge of the universe and the capacity of the human intellect to overcome difficulties, it was natural that society at large

should become conscious not only of its needs, but also of the right and possibility of having them supplied. Hence, among the working classes, among whom wages still remained low, and the conditions under which they lived showed but little improvement, there grew a deep-set determination to assert and obtain their rights. Trades unions grew apace, and even a Conservative Government gave partial legal rights to these organizations.

THE PERIOD OF AGITATION.

The agitation was, as always, for the recognition of popular rights. The year 1829 saw in England the Catholic Emancipation Bill passed, admitting Catholics to the rights of free citizenship, while a bill of Parliamentary reform, the agitation for which had convulsed the kingdom from end to end, became law in 1832. In 1833 the results of the long agitation by philanthropists were crystallized in a bill for the abolition of the slave trade in the British colonies; in 1834 the growing evils of pauperism were checked by the enactment of a new Poor Law, while in 1835 the Municipal Corporations Act restored to the inhabitants of towns those rights of self-government of which they had been deprived since the fourteenth century. The year 1836 saw the passing of an act giving Dissenters the right of civil marriage, and 1839 the appointment of a committee of the Privy Council on Education. But now the long results of all these movements toward social progress were to bear fruit in the applications of the newly discovered facts of science to measure sanitary reform. The echoes of the warnings of Sir John Pringle regarding the preventable evils under which the troops had suffered in Flanders, in 1742, and of the unnecessary mortality from jail fever, given in 1750, had long since died away; and though it had been shown that scurvy had been prevented on the ship *Resolution*, which sailed around the world under Captain Cook, by the use of fruits, and even though Lavoisier had spent weeks in studying the pestilential air of the great sewers of Paris, yet the fatalistic belief in disease being a punishment of men for their sins was too deep-seated to enable the bearing of isolated scientific facts upon the preventability of disease to be in any great degree realized. But now the evils resulting from the congested populations of industrial centres were becoming so apparent, and the losses to industry through epidemics of typhus, small-pox and cholera to commerce so positive, as to be no longer unnoticed by the growing altruism of a progressive nation. Child labor, often paid for at a penny a day, had become a monstrous and a crying evil; yet workmen were driven by poverty to send one after another

of their children into factories, only in the end to beat down their own wages. Children of six and seven years of age often worked twelve hours a day in factories where the atmosphere, physical and moral, was abominable, and children of both sexes were growing up in a commercial slavery. Agitation in Parliament caused a committee of inquiry to be appointed, and eminent physicians pointed out that the system meant a mental, moral and physical degradation of the mass of the English people. In the Reform Parliament of 1833 the good Lord Shaftesbury became the people's champion, and introduced a bill limiting child labor to nine years, while the manufacturer raised the cry that with such keen foreign competition English manufacturers must be ruined. Although the doctrine of *laisser faire* succeeded in making the ten-hour period applicable only to children of thirteen, yet trade was not ruined, but flourished remarkably in succeeding years.

EDWIN CHADWICK.

The Government Actuary had already made a statement before a Parliamentary committee that though the social conditions of the middle classes of England had improved, yet their expectation of life had not increased. The matter was brought to the attention of a young lawyer who was interested in such matters, and in 1828 he published a criticism of its conclusions which won the attention of leading social reformers and economists. The name (ever dear to sanitarians) of the lawyer was Edwin Chadwick, who, as stated by his biographer, began the study merely as a question of statistics; but, as the labor progressed, a new train of reasoning came into his mind, which he called the "sanitary idea;" that is to say, "the idea that a man could, by getting at first principles and by arriving at causes which affect health, mould life altogether into its natural cast, and beat what hitherto had been accepted as fate by getting behind fate itself and suppressing the forces which led up to it at their prime source." Other papers on "Preventive Police" and "Public Charities in France" followed, and Chadwick was greeted by old Jeremy Bentham, then in his eighty-second year, as a disciple of his creed that "the work of the legislator is to enable people to live happily." Chadwick, now seized with the sanitary idea, went slumming in East London and took typhus, and all but became one of the first martyrs to sanitation. He lived, however, to become secretary of Lord Grey's Poor Law Commission in 1832, and in 1834 we find him installed as permanent secretary of the New Poor Law Board, having acted in 1833 on the Poor Law Com-

mission, in whose report he succeeded in having inserted a clause dealing with the half-time system, by which those children only could be employed who could present tickets showing three hours spent daily in some school during the previous week. Though the Lords amended these proposals somewhat on the ground that they would lead insidiously to a system of universal national education, yet it was soon found that sixty per cent. of the destitute orphan children were going to Poor Law schools; and it may be noted that this is the law in successful operation up to the present day in industrial schools. Of Chadwick's labors during the next five years, Lord John Russell, the father of so many of these Parliamentary reforms, said: "For the relief of the destitute and prevention of pauperism, the improvement of the public health and the physical condition of the population, there was no one to whose zeal and assiduity the country is more indebted than Mr. Chadwick." But his labors were to bear further fruit.

REGISTRATION.

The Dissenters had been urging that the State should undertake the registration of births, marriages and deaths, as well as allow marriages to be celebrated by Dissenting ministers. Chadwick saw in this the opportunity to promote the first great principle of sanitary reform by having the causes of death tabulated, thereby establishing a basis for sanitary study and deduction, while the Government, to be relieved of a political agitation, followed the lead of Lord Lyndhurst, and in 1836 passed the Registration Act in large measure as it now exists, and the year 1838 saw that distinguished man, Dr. William Farr, installed as Registrar-General. To the study of these returns of the last sixty years every one of us is prepared to say, in the words of Dr. B. W. Richardson, the biographer of Chadwick, "The proverb that pestilence walketh in the dark is no longer true; pestilence, measured and registered, walketh at last in the open day." We have already referred to the distress and discontent succeeding the Napoleonic wars. These, however, were not all or the greatest of the evils. In 1816 typhus and relapsing fever appeared in the rookeries of London, and became epidemic throughout England. Relapsing fever disappeared in 1819, but typhus remained endemic, again becoming epidemic in 1826-7. The year 1826 saw another disease appear, then unknown; but in 1849, through the studies of Drs. Budd and Jenner, it became known as typhoid. But evil followed evil, for the decade between 1830-40 saw Asiatic cholera advance from Russia to Germany and sweep

over England in the epidemic of 1832-34; small-pox prevailed in 1836-39, and Russian influenza followed in successive waves in 1831-32. And with this decade, in which the emigration of the population grew in increasing numbers, we see America entering upon those years which were similarly to mark the beginnings of State medicine. Of the period prior to this, Dr. Bowditch, in his "centennial discourse" at Philadelphia, in 1876, briefly writes: "It is the epoch of systems of medicine, wrought out by the imaginations of some few of the leaders of our profession. This epoch believes in drugs, and their almost supreme power over art. It has little or no faith in Nature's ability to cure disease." With the passing of Dr. Benjamin Rush, in 1833, the greatest American physician of his day, this epoch of "Systems of Medicine," in which there was no belief in the *vis medicatrix naturae,* came to an end. The teachings of Louis, a preceptor of Bowditch, were now to influence the medical ideas and practice of the rising generation, and to them Bowditch ascribes the "basis of public hygiene" in America, developed principally by the writings of Bigelow and Bartlett, with Oliver Wendell Holmes. But to return to the scene of the great agitation, which we have seen already as being well advanced: we find that the investigation by Chadwick into the condition favoring the epidemic spread of typhus in London was bearing abundant fruit. Bishop Bloomfield, then of London, realized the full significance of the facts set forth, and threw all his energy and powerful influence into Chadwick's grand sanitary design; and Lord John Russell, in 1839, instructed the Poor Law Commissioners "to institute what afterward became the far-famed inquiry into the health of the laboring classes of the other parts of England and Wales beyond the Metropolis," which report, prepared by Chadwick, was presented to the Home Secretary in 1842. In the next year this indefatigable secretary prepared papers on "Graveyards of London" and "Intramural Interments and Disinterments," resulting in the compulsory establishment of cemeteries outside of towns and cities. The cause was soon to find another champion in that noble man, the Prince Consort, the spokesman of our beloved Queen, whose glorious lifework is not yet completed. Through his great influence, assisting the labors of more active reformers, Sir Robert Peel appointed a Royal Commission consisting of such famous men as Professor Owen, Dr. Lyon Playfair, Mr. Robert Stephenson, Mr. Smith, of Deanston, and Mr. William Cubitt, to report on the whole subject of the health of the nation. This report was published in 1844. Although no immediate legislative action followed,

yet in 1847 another commission, with Chadwick as a member, was appointed to inquire into the "sanitary condition of the Metropolis." The evidence of thirty-five witnesses therein set forth was most startling in its effects on the public mind. An immediate result was the formation, in 1848, of the first Board of Health, of which Lord Shaftesbury and Mr. Chadwick were members. And it was none too soon, since a virulent outbreak of cholera appeared in 1849. It will thus be seen how the "Period of Agitation," together with our "Period of Investigation," employed the energies of the people of England for half a century. But the labors of the ever-increasing band of workers in the fields of pure science had been gaining in force and directness of aim. In 1831 there had assembled at York individual members of local scientific societies, and the British Association for the Advancement of Science was organized. In its annual reports, which now for seventy years have appeared, have been collected the labors of workers in every field of science. Referring to the isolated position of workers in the field of science, the first president of the association expressed a sentiment yet to be repeated with much force, viz., "I do not think it is either politic or liberal to keep those who employ their rarest intellectual endowments in the direct service of the country upon a kind of parish allowance," which was but saying what Voltaire said of the encyclopedist Diderot, who got but £120 for years for his work, "and then to think that an army contractor makes £800 a day!" We now pass naturally to the formative period of public health, which we may properly designate—

THE PERIOD OF LEGISLATION.

The formation of the first Board of Health for the Metropolis served to meet the emergency caused by the outbreak of typhus and cholera which marked these years of great political agitation, with their Chartist risings and Socialist organizations, all growing out of the increasing sense of injury and injustice, for which in the popular mind the rich were in some way responsible. The year 1845 of the potato famine in Ireland presents a picture of misery, the memory of which remains with many yet living, and which from the sanitary standpoint proved of extreme importance to this continent. In the year 1847 very many thousands of the sufferers emigrated to the United States and Canada, and the horrors of the voyage during a passage of many weeks can now be realized only by a visit to the silent burial grounds of the quarantine stations of the Atlantic seaports. During that fatal summer alone

8,639 cases of ship fever, and 5,424 interments took place at Grosse Isle, in the St. Lawrence, where a monument still stands to the memory of the devoted physicians who died at their posts ministering to those unfortunates. From the ports the disease spread inland, and to-day the graveyards of many towns along the great inland waterways have numerous memorials of the years of the ship fever, while the cholera of 1849 added still further to the horrors of the sea-voyage, and to the dangers to the populations along the great immigrant routes of the St. Lawrence and the Erie Canal. The first great measure of reform in England arising out of this condition of affairs was the abolition of the Corn Laws, described by Lord John Russell as "the blight of commerce, the bane of agriculture, the cause of bitter division among the classes, the cause of penury, fever and crime among the people." How the hopes of the people were lifted up, accompanied by the deep stirrings of the public conscience, may be seen in the literary romances of the time of such writers as Canon Kingsley in his "Yeast" and "Alton Locke," the one dealing with the conditions of the agricultural laborers, and the other with the employees of sweat shops, and of Charles Dickens, who in "Little Dorrit" and "Nicholas Nickleby" makes scathing attacks on the prison system and the Yorkshire proprietary schools. Such are but a few of the influences which gave momentum to the social reforms following financial reforms, the results of the work of Russell, Cobden and Bright. Political changes retarded somewhat the development of the public health measures instituted by the "Health of Towns Act" of 1849, and of the first Board of Health, whose existence practically ended with the report of 1854, prepared by Chadwick, now Sir Edwin. Its work was thereafter placed under the Local Government Board, combined with the Poor Law administration. Of this great sanitary reformer, whose work now came to an end, the political economist, John Stuart Mill, in writing to him, said: "I need only mention the Sanitary Department, the importance of which, now so widely recognized, you were amongst the very first to press upon a careless public." Under this first Board of Health was appointed Dr. John Simon as the first medical officer of health, and the City of London Reports, 1849-1854, supply us with the first series of public health reports in which the now every-day subjects of "House Drainage," "Public Water Supplies and Their Pollution," "Social Position of the Poor and Their Overcrowding," "Offensive Trades," "Smoke Nuisances," etc., are systematically dealt with. With the instincts of a general, Dr. Simon began, in 1853,

to prepare for the cholera, which again appeared in 1855, and he has given us in the report of that year not only a history of its progress, but the first comprehensive summary of the sanitary conditions upon which the prevalence of cholera depends. I cannot forbear quoting a paragraph which illustrates how the facts developed in the fields of pure science had invaded the field of practical medicine. He says: "Thus, then, our position stands. Scientific prediction of phenomena can arise only in the knowledge of laws. That the phenomena of this disease, however capricious they may seem, are obedient to absolute uniformity as yet beyond our ken, are enchained by that same rigid sequence of cause and effect which is imposed on all remaining Nature, it would be impossible to doubt." But with regard to larger views on public health we have only to follow the subjects discussed by Dr. Simon in his five successive London Health Reports. In that of 1854 he especially deals with a subject of intense interest to many members of this Association, viz., "The Establishment of a Department of Public Health, presided over by a Minister of the Crown." He says: "But at least as regards its constituted head sitting in Parliament, his department should be, in the widest sense, *to care for the physical necessities of human life.*" Such separate department with its Minister of Health was not to be; nevertheless, the General Board of Health was continued, and we find Dr. Simon again, in 1858, addressing the Right Honorable the President of the Board when making a report based upon the lectures of Dr. Greenhow, Lecturer on Public Health in St. Thomas Hospital, "On the Present Wasteful Expenditure of Human Life in England." Utilizing the Registrar-General's statistics of annual deaths during the twenty years since the Registration Act was passed, this paper deals with the causes of deaths, pointing out that "thousands of deaths annually result from diseases which are in the most absolute sense preventable," and goes on to point out in detail the different diseases included in this category. Successive annual reports presented new series of facts, each repeating with gathering strength the truths of preventive medicine; and we find that the proverb: "*Gutta cavat lapidem,*" was here, as ever, true, for with the reappearance of cholera and typhus in 1865, public health measures were instituted having a scope hitherto unknown. The Government ordered certain scientific researches to be undertaken; we find medical officers sent to the Continent to study these diseases in the seats of their prevalence, and special investigations instituted in those towns where these diseases had

already appeared in England. Expert chemists, too, were engaged in studying the physiology of diseases in man, and now for almost the first time we find Governmental intervention in the case of outbreaks of disease in animals. Of these the most important was that by Professor Granger into the causation of rinderpest, which caused enormous losses of cattle both in England and on the Continent. · It is in the report of 1869 that we find Dr. Simon first referring to those discoveries which have shed undying glory upon the name of Pasteur. He says: "It will now be seen that the views indicated in Dr. (Burdon) Sanderson's report with regard to the agencies of morbid infection are the views of Schroder and M. Pasteur on the agencies of fermentation and putrefaction." Throughout all this period of legislative progress there had been developing with increasing momentum the influence of those workers in pure science whose early labors have already been referred to in some detail. From time to time workers in the field of natural history had expressed views based upon variations in type through environment of both plants and animals; but not until the "Origin of Species," by Charles Darwin, was published in 1859, had any scientific hypothesis capable of accounting for biological evolution been given to the public. In 1863 Thomas Henry Huxley published "Man's Place in Nature," and to these works must be credited much of the growth of that method of thought which has been carried into every field of scientific research during the latter half of the century. To comprehend how the scientific imagination was directed into a hitherto untrodden field, we have to turn to the labors of a school of workers in France, soon to become famous through the discoveries mainly due to the labors of Pasteur, known to his countrymen, as to all others, as *le Grand Maitre*. He may, indeed, in the Carlylean sense, be called a "Poet of the Unseen." Following, as a chemist, the studies of Spallanzani and Gay-Lussac in the field of fermentation and putrefaction as applied especially to beer, he was soon attracted by Cagniard Latour's and Schwann's experiments proving the relation of the yeast-cells present to beer fermentation at a time when Helmholtz had seemingly been forced to again support Liebig's stoutly maintained oxygen theory. But in 1857 Pasteur had established the vitalistic theory beyond question, when he proved the presence of rod-like cells distinct from yeast-cells by cultivating a new species of germ in sugar as present also in the souring of milk, wholly apart from albuminoid substances. It became his firm conviction that the fermentative process depended upon the life of the organ-

isms present; and by the introduction of culture solutions he gave us the first step in that science which we now term bacteriology. Following this came that other remarkable discovery that certain organisms to which he gave the name *anaerobes* were paralyzed by the presence of that very oxygen which, till now, had been supposed to be the very essence of fermentative changes in organic substances, and soon proved that the real change was that of the fixation of oxygen during the growth of the bacteria themselves. But this germ theory had many battles to fight before it succeeded against the school of Liebig, especially prominent amongst whom was Pouchet, who taught an old doctrine of spontaneous generation. Not till the battle was renewed in England by Dr. Bastian, as late as 1876, again to be driven out of court by the beautiful experiments of Tyndall on germless air, as shown by rays of light, was the germ theory of *omnis cellula a cellula,* or *omne vivum ex ovo,* to take its place as the discovery which has absolutely transformed medical and surgical practice during the last quarter of the century and given us a practical working basis for that isolation and disinfection in contagious diseases which has reduced their prevalence and mortality to an extent beyond the most sanguine dreams of the early apostles of the new doctrine. Never was prophecy being more truly fulfilled than that of Pasteur: *"Il est au pouvoir de l'homme de faire disparaître de la surface du globe les maladies parasitaires, si, comme c'est ma conviction, la doctrine de la génération spontanée est une chimere."* All will recall those experiments, published first in 1877, when this savant, who, at first with such trepidation, trespassed on the field of medicine—for, as he said, he was a chemist and neither physician nor veterinarian—gave to the world practically all we to-day know regarding anthrax. As in the field of fermentation, others, as Pollender, Rayer and Davaine, and Robert Koch, had already discovered the rod-like bodies in anthrax blood; but it required the wizard touch of Pasteur to give life and meaning to their studies. Never has romance had more fascination than the story of how Pasteur not only proved the *rod forms* to be the cause of the disease, but also showed that the slight difference in the blood temperature of men, animals and fowls played a governing part in the propagation of the disease; and finally, as he showed in 1881, that by heat the virus could be attenuated until vaccine could be prepared for inoculation against the disease. In the words of his disciple and assistant, Roux, "medicine had never before witnessed such perfection in experiment, such rigor in deduction, such certainty of application."

His further work in the field of immunity, especially with regard to rabies, is now common knowledge, while millions of francs have been saved to France through inoculation with anthrax vaccine, and hundreds of lives have been saved from death through the vaccine against rabies. The establishment in Paris of the Pasteur Institute, that magnificent international monument to the genius of the "Great Master," has become for all of us an oft-told tale. Of him, in the closing years of his life, an intimate friend has written, after describing his personal appearance: "That is Pasteur as he appeared to me—a conqueror, who will some day become a legend, whose glory is as incalculable as the good he has accomplished."

THE PERIOD OF ELABORATION AND DEVELOPMENT.

As will have been noted, Pasteur's first great discovery, that of the bacillus of anthrax, in 1876, marks the beginning of the fourth quarter of the century, which we have designated the "Period of Elaboration and Development." This is, too, the period which may be said to mark the beginning of what we call Listerism in surgery. It was at this time that Tyndall addressed a letter to Pasteur referring to renewed attacks on the germ theory and speaking of "the unattackable exactitude of your conclusions." It was, too, the year of the Centennial Exhibition in Philadelphia, and the holding of the first Public Health Congress in America, shortly to be followed by the outbreak of yellow fever in the valley of the Mississippi, which hastened the establishment of the National Board of Health—of brief but happy memory—and which gave the impulse owing to which health boards have been established in almost every State or Province of North America. In the Republic of Mexico we also find that a Supreme Board of Public Health had been formed as early as 1841, placing that republic in the first rank amongst us in recognizing the duty of the State to deal with public health as a national matter; yet, as pointed out by Dr. Orvananos, it was not till that remarkable man, General Diaz, was made President, in 1876, that this Board was established on a permanent basis. Thenceforth the evolution of public health work in Mexico has been continuously directed by our confrère, Dr. Liceaga, whose labors during a quarter of a century for his country and for our science entitle him to a first place amongst the sanitarians of this continent, and, indeed, of the world. In no country that I am aware of does there exist to-day a more complete sanitary organization, or one in which the legislative, administrative and scientific functions are better co-ordinated or more efficiently

carried out. As the St. Lawrence gateway was that through which cholera was first brought to this continent in 1832, so to the Provinces of Canada belongs the honor of very early general health legislation. In 1833 the Legislature of the Province of Upper Canada passed an act entitled "An Act to establish Boards of Health and to guard against the introduction of malignant, contagious and infectious diseases in this Province, and for the formation of local Boards of Health;" but as the emergency passed, so the central health authority was discontinued, and not till 1882 was the first Provincial Board of Health, with permanent officers, established in Canada. In England the year 1875 marked the consolidation of public health laws and their extension to the formation of rural sanitary areas and the bringing of the country districts under the same legislation which had applied hitherto to towns. While it has seemed well to confine this history of sanitary progress during the century to those countries of Europe where its first victories were won, yet it must not be forgotten that the needs of the population of the cities of this rapidly developing continent were not forgotten, though, as appears from Dr. Bowditch's paper in 1876, only in eight of forty-eight States had State legislation dealt seriously with public health matters. Since then, as illustrated in Dr. Abbott's admirable summary of public health progress in the United States during the century, what a change is apparent! To-day in this association we find representatives of State organizations from almost every State and Province from the Tropics to the Arctic Circle. The three national Governments—the United States, Mexico and Canada—lend their dignity to our councils through their official representatives; and what may be termed a system of continental health observatories is reporting weekly the epidemiological conditions which affect 90,000,000 people. National quarantine services co-operate with State boards in protecting seaboards of 5,000 miles in extent against foreign invasion of disease, and many thousands of local Boards of Health are constantly engaged in the routine task of improving local sanitary conditions and suppressing outbreaks of those communicable diseases which formerly spread uncontrolled as epidemics. Thousands of cities, towns and villages, by public waterworks, have caused typhoid fever to become one of the least prevalent diseases, while cholera and yellow fever are rapidly becoming only a memory. In the field of animal diseases progress on this continent during this period of development has been yet more remarkable. Especially have we

seen in the Bureau of Animal Industries of the United States the development of the most extended application of science to a branch of sanitation which the world has ever seen. That it has been due primarily rather to commercial than to health considerations need not lessen our admiration for a work whose progress has been intimately connected with one of the oldest and most active members of this association. To me the history of this organization, embodied in the labors of Dr. Salmon, is one of the highest examples of the rare combination of scientific methods with executive administration which has ever been witnessed; and one can only conceive what the sanitary progress of the United States might have been had a similar bureau developed, as has the Imperial Health Institute of Germany (public health) in dealing with the diseases of mankind. I have already dwelt much too long, I fear, on the causes which have made the last twenty-five years the golden age of public health. Of the innumerable discoveries in the field of biology one need not speak, for are we not all in some degree a part of them? If Germany has its Koch and Loeffler, have we not our own Sternberg and Salmon and Sanarelli? If Haffkine, Kitisato, Roux and Mansen have shed glory on our science in Eastern lands through their discoveries, so have Welsh, Osler and Councilman lent lustre to experimental medicine on our own continent! In the field of the practical application of science during these twenty-five years on this continent, we may reply in the slightly altered motto of one of your States: "*Si quæris agrum amœnum, circumspice*"—"If you seek a pleasing prospect, look around you." For the century which is ending the task has been accomplished. Said Professor Tyndall, in 1876: "Science desires not isolation, but freely combines with every effort toward the bettering of man's estate. Single-handed, and supported not by outward sympathy but by inward force, it has built almost one great wing of the many-mansioned home which man in his totality demands." But to the thoughtful observer of society, as we find it to-day, with its strife between capital and labor as an unsolved problem, recalling with a merciless industrial competition, still making many of our people as galley-slaves, living under unsanitary conditions which are our shame, and existing on husks while our granaries are bursting with corn, the dealings of Providence must appear, as they did to Job of old, very incomprehensible. With Carlyle such an one is forced to say: "Did I not believe that an Intelligence is at the heart of things, my life on earth must be intolerable." But for us, with the history of the passing century before us, surely there

is room for encouragement. Browning, the poet of optimism and a sincere believer in evolution, insists on the love of the Creator being immanent and operative in human life, and in spite of the woes and sorrows of mankind, as ever carrying him upward, nearer to the moral ideal. As he says in "Paracelsus":

> "And, man produced, all has its end thus far;
> But in completed man begins anew
> A tendency to God."

For us as scientific workers, who have been students of the world-processes in the æons which have caused, as Tennyson calls it, "this fine old world of ours," to rise out of chaos, it ought not to be difficult to take courage from what we have seen this century to have accomplished in the field of our own science, even though it be but a stone in the edifice. Shall we not enter upon the work of another century with perfect faith as to the ultimate results, trusting in the words of Tennyson:

> "O yet we trust that, somehow, good
> Will be the final goal of ill;
> To pangs of nature, sins of will,
> Defects of doubt and taints of blood;
>
> "That nothing walks with aimless feet;
> That not one life shall be destroyed,
> Or cast as rubbish to the void
> When God hath made the pile complete."

INFANT FEEDING.*

By Abraham Jacobi, M.D., LL.D.

He said that in recent years a great deal of literature had accumulated on the subject of the preparation of food for the infant. Most of this consisted of dictatorial precepts founded on supposedly scientific laboratory investigations rather than on the results of clinical experience. Most of the writers on the subject seem to have overlooked the fact that chemistry is not physiology and that the infant stomach is not a test-tube. Besides this, in Dr. Jacobi's

*Report on the Artificial Feeding of Infants which Dr. Jacobi prepared by request for the International Congress at Paris, 1900, of which an abstract only was presented to the Section on Children's Diseases at Paris, and by special invitation read in full at stated meeting of the New York Academy, October 4, 1900.—From "Medical News" report, October 27, 1900.

characteristic way, he said that much of the recent literature on the artificial feeding of infants exhibited the carping spirit so distinctive of ambitious mediocrity. The science of man and of his diseases does not find the solution of its problems in chemical or mathematical formulæ. Certain phases of the recent literature, however, are of great interest and at least suggestive if not of practical value.

Mothers' milk is not the definite compound that some have been accustomed to consider it. The child may thrive on one woman's milk and fail completely to do so on another's. Some standard for the preparation of an artificial food that will more or less resemble mothers' milk is needed. A standard is obtained by taking the average of a series of analyses of human milk. The analyses of different examiners have proven, however, rather contradictory. This is not so much to be wondered at, however, if we bear in mind that not only the milk of different women differs, but the milk from the same woman may differ according to her physical condition, according to the amount and character of the food she is taking and even according to her emotional state during a given period. Variations in milk as the consequence of menstruation and of excessive lactation are well known. It has been said that there is more albumin in human than in cows' milk. Whether all of the albumin in women's milk occurs in the form of casein is not known. Pfeiffer insists that all the nitrogenous substance of milk exists in the casein. This matter is still in doubt. The usual assertions, therefore, with regard to the comparative casein content of human and cows' milk are not absolute. It is known that there is more phosphorus and less sulphur in women's milk than in cows' milk, also that the inorganic acids and salts of women's milk are not precipitated as easily from their solution as in cows' milk. It is known that lab-ferment produces larger curds when allowed to act upon cows' milk than upon human milk. All of these are important differences between the two substances with regard to their nutritive value.

Nearly all the phosphorus in women's milk exists in the form of readily absorbable organic compounds. In cows' milk the phosphorus exists in the shape of an organic compound difficult of absorption. This constitutes without doubt one of the great reasons for the frequent development of rickets in bottle-fed babies. Something of the same thing can be said for the iron which exists in milk. There is less sodium in cows' milk, and for this reason it is advisable to add sodium chloride to any artificial food whose basis

is cows' milk. The necessity for the addition of sodium chloride is emphasized if cereals are added to cows' milk in the preparation of baby food. Zweifel, in the chapter of his new book which treats of rickets and its causes, says that the women of the lower classes in Saxony are accustomed to eat bread that, according to the habit of the country, is made without salt. This has, undoubtedly, according to him, an influence in the causation of the large amount of rickets which is seen in that country. Fortunately for the infant, nature has permitted considerable latitude as regards the food which may be necessary for a child's nutrition. It is to this fact rather than to any definite knowledge with regard to the ideal baby food that is to be attributed the modicum of success the medical profession has had in artificially feeding infants.

ADVANCE IN ARTIFICIAL FEEDING.

Just one good step forward in the matter of artificial feeding has been definitely made as the result of these dozen years of work. This is the heating of the milk—some method of sterilization, Pasteurization or Tyndallization being used. Undoubtedly dirty dairies have been and are still the source of a great deal of disease. Scarlet fever and diphtheria are probably spread more by milk than by any other known means. After water, milk is the most serious distributing agent of typhoid fever. The germs get on the hands of those who furnish milk for the market. The bacilli also get into the water in which the vessels are washed. It has come to be realized of recent years that tuberculosis is also occasionally spread by milk. The most serious consideration in the matter is the wonderful rapidity with which microbes grow in milk. A few bacilli find their way into the milk and in twenty-four hours there are millions of them. Only sterilization can protect against these bacterial dangers. Short sterilization is not sufficient and some form of heating is advisable even in winter and in country places where the milk is reasonably fresh. A germ-free milk cannot be obtained. According to the bacteriologists all that is required is that milk shall not contain more than 10,000 germs per cubic centimeter and that none of these shall be pathogenic. It was found in Berlin that some pathogenic bacteria occurred in 80 per cent. of samples of milk obtained in the ordinary course of commerce. Heat to at least 100 degrees C. is necessary to protect against these bacterial dangers, even when the bacteria are not specially pathogenic. Degeneration of the liver, pancreas and kidney take place as the result of the presence of even non-pathogenic micro-organisms in the intestines.

Intestinal irritation produces its effect on the general system, even when the microbes themselves do not find their way beyond the intestinal wall.

If bacteria contain fat, as does, for instance, the tubercle bacillus, they possess greater resistive vitality than other micro-organisms and require at least 100 degrees C. When microbes occur in fat the same rule holds and the microbes of butter and of rich milk require specially high temperatures for their destruction.

The presence of one-fifth of 1 per cent. of lactic acid prevents the sterilizing effect of Pasteurization. The presence of lactic acid, however, inhibits the growth of micro-organisms, so that while it is a disadvantage it is also an advantage. Unfortunately it seems true that when sterilization is conducted at high temperatures a change takes place in the albumin of the milk. At temperatures that fail to destroy the spores of bacilli and that do not affect their toxins, milk albumin becomes so changed as to be rendered very difficult of digestion.

The only means thus far found to overcome these difficulties in the sterilization of milk is the method invented by Tyndall. This consists of discontinuous sterilization. That is, the liquid to be sterilized is heated several times to a temperature high enough to kill ordinary micro-organisms. In the interval between two sterilizations, microbes that during the first heating were in the resistive spore stage germinate and take up the ordinary bacilli form. These are destroyed by the next heating, and the few spores left in the same way by the third heating. It is now over forty years since Dr. Jacobi first directed that milk for infants' food should be heated several times before use. It is the immortal merit of Soxhlet that he systematized this method of sterilizing milk. It is better that milk should be sterilized by a private family for its own use than that it should be secured from a laboratory which sterilizes it wholesale for commerce. The hay bacillus and Pflüger's bacillus are often found in milk and are especially resistive to heat. Their presence, while not especially dangerous, is undesirable because of certain changes that are induced from the milk. It must be remembered that the membrane formed over milk during the boiling process helps to keep tubercle bacilli alive. Hence the milk should be stirred during the boiling or the scum should be removed as it forms and the boiling continued for some time afterward.

The idea has gained ground that the sterilization of milk produces changes in it which make it indigestible and so lead to the development of that disease of malnutrition which has become

somewhat common of late, namely, scurvy. The American Pediatric Association collected 379 cases of this disease. One hundred and seven of these children had been fed on sterilized milk, while the remainder had been fed in various other ways, a few of them even on mothers' milk. It is evident then that sterilized milk is not especially the cause of the disease. Marfan denies all connection between the scorbutic tendency and the use of sterilized milk. He claims that scurvy is always due to overfeeding. Overfeeding, however, has been a failing of mothers from time immemorial, yet in recent years scurvy has become much more common than it was. Dr. Jacobi sees many more cases of it now than he did in the first years of his practice. He is convinced that the increased number is not due to better diagnostic acumen of late years, nor to the fact that the disease is looked for with more care.

It is probable that whatever influence in the production of scurvy is due to sterilized milk comes from the heat changes produced in the albumin. The proteid material thus becomes inassimilable and the child's nutrition suffers. It has been the custom to think that if heating for twenty minutes did good, heating for an hour would assuredly be of benefit. Some have even recommended the continuation of Pasteurization for from forty to sixty minutes. This is inadvisable and it is from this overcooking that the milk becomes unsuitable to the infant digestion.

MILK MODIFICATIONS.

Rotch's work in the modification of milk has been most helpful and suggestive. He requires that the cows' milk which forms the basis of the infant's food should come from large dairies rather than be the milk of one cow. Most infections come from small dairies. The milk should be obtained with the most careful precautions as to cleanliness, should be immediately put on ice and kept thus until ready for use. In order to adjust the proportions of cows' milk, he suggests the separation of the cream from the milk by a centrifugal machine. He then mixes cream and milk in what are considered to be suitable proportions for the given case, diluting where necessary with water or lime-water. Of late he has used barley-water as a diluent. Each infant requires an especially prepared prescription and Rotch has stated that as many as 500 different modifications may be needed for different infants. It is evident that this is a very complex method. It is probable that most infants will thrive on this modified food, but many, despite precautions, will suffer from mild rachitis and craniotabes. This

is because the phosphorus and certain ingredients of animal food are lacking.

It is doubtful if the laboratory preparation of milk for infant feeding will ever be a success. This method encourages routine, which is just the thing that is not wanted in infant feeding. There are those, moreover, who have seen flies and cockroaches in laboratory bottles. While these insects had doubtless been sterilized in the preparation process in the laboratory, they are not desirable ingredients of baby food. Laboratory food is, besides, very expensive. It is not for the poor at all. From three to four dollars a week, or more, is beyond the means of the ordinary family for baby food. It is probable that the separation of milk by mechanical methods that involve over 6,000 revolutions a minute, disturb the constitution of the milk. The cream separates and may not again unite. Mice have been fed exclusively on milk and lived, but when the milk was run through a separator and the ingredients mixed again they did not thrive. The reunited ingredients of the milk do not form milk in the true sense of the word.

It is not entirely certain that the milk sugar which occurs in women's milk is the same as that in cows' milk. Certainly the milk sugar which occurs in commerce is notedly impure. It is probable that for feeding purposes, cane sugar is at least as good. It has been shown that cane sugar is changed by microbic action into lactic acid. As this is one of the modifications of milk sugar which is supposed to be of special benefit to the infant because of its inhibitory effect on bacterial growth, one feature of the necessity for milk sugar disappears. In any ordinary cow's milk it is probable that there is enough milk sugar for the infant's nutrition. It is far easier to give too much than too little sugar. It is better to give small amounts of cane sugar than larger amounts of dubious milk sugar. Some milk sugar is absorbed as galactose and glucose, so that the direct use of glucose is not irrational. Marfan gives cane sugar because it is so difficult to obtain pure milk sugar in commerce. Cane sugar should be increased in the infant's dietary whenever the child suffers from constipation. The material makes a simple laxative and does away with the necessity for undesirable drugs.

Fats are added by some to cows' milk partly for their influence on the nutrition of the infant, and partly because they are supposed to assist the digestion of casein. It is probable that the fat of cows' milk should be reduced rather than increased. In nurslings a great deal of fat is eliminated unchanged. If the amount eliminated be-

comes excessive, intestinal irritation is set up and a fatty diarrhea is liable to ensue, which still further reduces the amount of fat absorbed by the infant. The fat of asses' milk is low in amount, yet, as is well known, this agrees very well with children—in fact, better than any other animal milk.

In France, plain cows' milk is very generally in favor for the feeding of children. In warm weather there is need of diluting the milk and of diminishing the total food taken. There are excellent reasons for high dilution. Babies need much more water as a rule than they are given. It should be given them in their food. It has been objected to this dilution that large quantities of liquids given dilate the stomach. This observation is not the result of clinical experience, but was evidently made at the desk. As soon as the quantity of liquid becomes slightly excessive the child's vertical stomach passes it on and the intestine absorbs it rapidly. Dr. Jacobi has never seen a case of dilatation of the stomach from the consumption of too much liquid, although he is accustomed to give liquids very freely. The lack of sufficient liquid in the system leads to the formation of uric acid infarcts and these predispose to nephritic calculus. Flushing out of the system also avoids irritation of the kidney. Milk if well diluted does not curdle in the thick, indigestible masses that pure milk does. When so diluted it leaves the stomach cleaner, and is liable to give the infant less trouble, for in the infant intestinal indigestion is very important. When infants are given plenty of water there is less loss of weight.

CEREALS IN MILK.

Of late years the prejudice against the use of cereals in infants' food has gradually been overcome. The dilution of milk with some cereal water, as barley water, makes it much more digestible. It has been said that infants are unable to digest starch, but this his been proved untrue. Heubner found in the infant of two hours, of sixteen days and of two months, that diastase was present in the parotid. There was none in the pancreas, and pancreatic digestion does not begin until the infant is nearly a year old. The old literature which condemned the giving of starch so vehemently referred to the excessive use, or the exclusive use, of starchy foods. The feces of an infant fed on milk diluted with barley-water contain no fat and very little starch.

In the discussion Dr. Koplik said that the nuclein of cows' milk contains phosphorus, but in a form in which it is frequently not absorbed by the infant. In this respect cows' milk is very different to

mothers' milk and hence rachitis develops so frequently in bottle-fed babies. Cows' milk must be used, but some simple modification will usually be sufficient, and scientific accuracy in the matter cannot be expected. If the infant does not thrive, slight changes must be made in the formulæ of modification. Moderately clean and fresh milk can now be obtained and, if on simple dilutions the infant does not thrive, cereals should be added. It is unfortunate that scurvy has been attributed to sterilized milk. Scurvy occurs in any food and is probably due to some pathological process that is interfering with digestion and producing toxemia. There are half a million of sterilized-milk-fed babies and less than 400 cases of scurvy. Scurvy is a curable disease, while affections that come from unsterilized milk are often incurable.

Dr. Chapin said that what we need is clean, fresh milk rather than Pasteurized milk. This can be obtained if the medical profession will give its attention to the subject and educate the dairymen and the public up to the idea of what constitutes good milk. The addition of cereals to milk often assists its digestion and, if the amylaceous material be dextrinized, there can be no objection to it.

Dr. Carr said that if the milk is fresh and clean, very little heat is needed in its preparation as food for the infant. One must adjust the food to the particular case. At times mothers' milk disagrees with the child or leads to rickets, and then even this natural food needs modification.

THE HUMANE AUTOMOBILE.

Under this title "The Electrical World and Engineer" (July 28) says: "During the 'record' hot weather of last week, the lower creation suffered equally with human beings, and only too often could suffering or dead horses be seen lying around the streets. When the trolley was being pushed and introduced, it was one of the arguments of this journal and others that its coming would be a great boon to the horse. That this is a mere matter of fact is shown, for instance, by such a road as the New York Third Avenue, which, during one very hot season when it had 3,000 horses, lost 600 of them in a few weeks, and had 300 more in hospital. To-day, with the same system operated electrically, no such scenes of animal distress as were then frequent are possible. There, and on hundreds of other lines, electricity has scored heavily upon the side of humanity, for the street car service was ever a hard and killing one. It is now the turn of elec-

tricity to emancipate, as far as possible from service in the torrid city, the horse of the cab and the dray. It is well to take steps to relieve them as was done last week, but it is better still not to employ them at all. The cruelty may not be intentional in many instances, but it is cruelty all the same; and where the driver, as too often happens, is a brute and a drunkard, the punishment taken by the poor, inoffensive horse in hot weather is something frightful. Let the automobile accomplish further its humane mission by banishing the horse utterly from our streets. Human life itself will then be longer, too."

ABOUT EGGS.

SOLDIERS' NEW FOOD.

The latest thing adopted by the Commissary Department of the Army, says the "Times-Democrat," is THE PORTABLE HEN.

It lays fresh eggs every day, is guaranteed to produce eight dozen, just as they are required, and weighs only two pounds. Requiring neither food nor water, it may be carried conveniently in a soldier's knapsack, and all he has to do when he wants an omelet or a "scramble" is to unscrew the "critter" and extract the raw material from it with a spoon.

Dried egg in cans is, to speak more exactly, the Army food of the immediate future. It is put up now by a number of manufacturers in various parts of the country, but chiefly in Missouri, under different trade names, such as "evaporated egg," "desiccated egg" and "crystallized egg." From two of these firms the War Department has recently purchased large quantities of the stuff, and thousands of cans of it have been shipped to China and to the Philippines for the use of our troops. One pound is equivalent to four dozen fresh eggs, and it affords an admirable substitute, being, to all intents and purposes, simply hens' eggs with the water extracted, and "keeping" for years, even in a tropical climate.

Fairly reliable statistics show that thirteen billions of hens' eggs will have been laid in the United States during the year 1900—a startling estimate, truly, inasmuch as these eggs, stood one on top of another, point to butt, would make a column 461,648 miles in altitude—nearly twice the height of the moon from the earth, when that orb is seen overhead. The annual value of this product exceeds that of any mineral except coal, and is greater even than that of pig iron.

No wonder, then, that the industrious Yankee hen is looking for an outlet for her superfluous energies. She is the great American expansionist. Under favorable circumstances she lays her own weight in eggs in six weeks, and she must have room to grow. The egg belt in this country, like the wheat belt, has moved steadily westward during recent years, and it is now in the latitude of Missouri, in which State and its geographical neighborhood more eggs are produced than in any other region of equal area in the world.

This is the area that produces a very large fraction of the winter eggs consumed in Eastern centers of population. They are called winter eggs because they are laid in the blooming summer time, when the gentle zephyrs agitate the tree blossoms, scattering their tender petals, and the amorous rooster calls his mate with stertorous note to give attention to the elusive but nutritious worm. During this annual epoch of plenty the prudent packer, well advised of an inevitable scarcity to come, buys up the ovi-product of the farmyard at six to eight cents per dozen, and puts it away in barrels of lime water or in cold storage. For, lo! after many moons have waxed and waned, he will be able to dispose of these eggs as "fresh-laid" at thirty to forty cents a dozen.

Near to the haunts of the feather producers, in the "heart of the Ozarks," or elsewhere in the chicken belt, "locates" the maker of dried egg, with a view to reducing to a minimum the cost of his raw material. From all the region round about, gathering them from farmers and farmers' wives, who have here a dozen and there a few hundreds to dispose of weekly—merchandise productive of pin money for the women, convertible into dry goods and ribbons at the country "store"—the manufacturer derives his supplies of "hen fruit." Millions of eggs pour into his hopper and as fast as they arrive are broken into pans, evaporated to absolute dryness and finally granulated by grinding. In this granulated shape they look like sawdust, and thus they are put up in barrels and tin cans. The preparation is in various forms, so that one may buy desiccated whites, desiccated yolks, "whole eggs" desiccated, or even desiccated ham and eggs.

Dried eggs have been utilized largely in Alaska of late, in the Klondike and at Cape Nome. They have been furnished to British soldiers in South Africa in Yankee cans. In this and other ways the American hen is distributing her product all over the world, and recent Arctic and Antarctic expeditions have carried similar supplies with them. Meanwhile the eggs of various species of wild fowl are being used abroad in the manufacture of a substance

called "egg albumen," which is imported into this country and extensively employed by bakers and for glazing prints. It looks like a fine quality of glue, broken into small bits; is golden yellow in color, and quite transparent and pretty. The price is about fifty-five cents a pound retail.

ART OF PRESERVING EGGS.

Thirty years ago the art of preserving eggs in the shell was wholly unknown. There were no heated cars to keep them from freezing in transit during the cold season, and in summer they "spoiled" for lack of refrigerating cars. Ignorance in such matters was so profound in that epoch that quite a sensation was created by the exploit of an adventurous but thoughtful person named S. P. Pond, now residing in Keokuk, Ia., who took a carload of eggs from the West to New York City in winter, tending the perishable freight himself with the help of a small stove and delivering them at their destination in satisfactory condition.

In those days $1 a dozen was frequently paid for fresh eggs in winter, and the supply even at such prices was small. Eggs were then packed most commonly in barrels, with oats or straw to prevent breakage, the modern crate and pigeon-hole box of pasteboard being as yet unthought of, and they were apt to taste of the packing. It was all quite primitive, indeed. At the present time eggs are kept by millions from summer to winter by pickling them in lime water or by keeping them in cold storage. There is money in buying eggs at eight or ten cents a dozen, keeping them in cold storage for five or six months and selling them at forty cents.

No wonder, then, that trial has been made of many processes for preserving eggs. They have been bathed in wax, coated with vaseline, painted with paraffin, treated with lard and manipulated in many other ways, but none has been wholly satisfactory. It has been ascertained that a hen's egg is provided by nature with a varnish which excludes the germs that cause decomposition, and the obvious conclusion has been drawn that every effort should be made to avoid washing this coat off, the desirable thing apparently being to increase the thickness and density of the protective envelope. Hence it has been proposed to wrap each egg separately in an air-tight package, and various other expedients in the same line have been suggested.

Unfortunately, it appears that each egg contains within its shell a small amount of air, which will inevitably cause decomposition after a while, even though the outer atmosphere be wholly excluded.

One inventor has proposed to withdraw this air by placing the egg in a vacuum, but the plan does not seem to have worked successfully. Freezing retards decay indefinitely, but destroys the edible quality of the ovi-product. On the whole, as declared by the Department of Agriculture, the best preservative is "water glass" (sodium silicate), one part to ten parts of water, the mixture to be poured over the eggs in jars, which should then be placed in a dry, cool cellar. A coat of vaseline does about as well, but is more troublesome, while lime-water gives a peculiar and undesirable flavor.

Various bi-products of hens' eggs are used to-day in interesting ways. From rotten ones is obtained an oil, useful as a lubricant and which in Russia has been highly prized for centuries as a cure for burns. The shells—turned out in immense quantities from the dried egg factories—are valuable for chicken feed. Some of the yolks are employed by hairdressers, and purchased by many women to make the hair soft and glossy, and to keep the scalp in good condition. Just as in the hog-packing business the "only part of the pig not utilized is the squeal," so in the egg industry nothing worth mentioning is wasted. The stale eggs, known in the trade as "seconds," are broken into cans, each holding thirty dozen, frozen solid, and when wanted are chopped out and thawed. In this form great quantities of inferior eggs are carried over from summer to winter and disposed of at a satisfactory profit.

More than twenty years ago an enterprising manufacturer undertook to turn out a product which he called "imperishable eggs." Much money was invested in the enterprise, but it failed, chiefly because the stuff, after being kept for a few months, could not be dissolved in water. Next a famous maker of condensed milk, who has earned an enormous fortune in that industry, took up the matter and tried to condense eggs in vacuum pans by much the same process he had used with the milk. He established a large plant for the purpose in China, where eggs are plentiful and cheap, but the enterprise did not "go," and he gave it up at length.

ATMOSPHERIC OZONE.

By R. A. HATCHER, M. D., and H. V. ARNY, Ph. D.

Having made some quantitative estimations of atmospheric ozone in the neighborhood of Covington, La., intended for use in an article upon that place as a health resort, the literature upon

the subject proved such a surprise to the authors that a separate article was deemed timely.

Though the "electrical odor" which we attribute to ozone had long been known, and Van Marum had, in 1785, passed a current through oxygen, producing a substance, some of the characteristics of which he studied, to Schönbein is due the credit of stimulating research upon this difficult subject.

Dr. Andrews (Phil. Trans., 1855-56, 1-3) showed that ozone was denser than oxygen, and, in the following year, Odling gave its molecular formula as O_3.

Soret (Ann. Chem., XIII., 257) confirmed this in 1865 by removing one-third of the oxygen from ozone with potassio-mercuric iodide, while he removed all the ozone from its admixture with air, by means of oil of turpentine.

Sir Benj. Brodie further confirmed Odling's formula by showing that three volumes of oxygen are condensed to two volumes of ozone, and that ozone has one and one-half times the density of oxygen.

Several methods have been suggested for the detection and estimation of ozone. Schönbein's paper is prepared by making a solution of potassium iodide in gelatinous starch paste, spreading this upon paper and drying, this being protected from light and air.

Houzeau (Pogg. Ann., CIX., 180), whose testimony is corroborated by Gianneti and Volta (Gaz. Chim. Ital., IV., 421), found Schönbein's paper unreliable, and recommended (Ann. Chim. et Phys., XXVII., 5) red litmus paper treated with a neutral solution of potassium iodide, ozone liberating potassium hydrate and changing color of paper to blue. He also suggested (Compt. Rend., XLIII., 38, and LII., 527) the use of a solution of potassium iodide for quantitative estimation, the ozone converting a part of the iodide into iodate, hydrochloric acid being added to liberate the iodine, which is estimated in the usual manner with sodium thiosulphate.

Hartley (Watt's Dict.) recommended potassium arsenite for ozone assay; ozone oxidizing arsenite to arsenate, and the ozone factor is deduced by calculation of loss of arsenite.

The detection and quantitative estimation of ozone in the atmosphere are particularly difficult, because of its minute proportion and by reason of the numerous normal and abnormal constituents of the atmosphere, which interfere with the test. It is, therefore, not surprising that widely varying and even con-

tradictory results are obtained by equally competent observers; not only as to conditions, time of day and season when greatest amount is present, but also as to meteorological changes and maximum amount. Its very source is still a problem, being variously attributed to action of sunlight, to evaporation of moisture (fresh and saline solutions), to electrical discharges (abundantly proven), to plant-life processes; indeed, one authority suggests the moist mucous membrane of the respiratory tract is capable of converting all the oxygen entering the blood into ozone!

The work done by the Michigan Board of Health to determine the presence of atmospheric ozone and its relation to disease or health has been very extensive and along lines which should lead to valuable results. Nicholson (Rep. Mich. Bd., 1880) has made numerous ingenious and interesting observations under conditions of hygienic interest. It is, however, much to be regretted that the unreliable Schönbein paper was used in all his work, thereby vitiating much of his data. For instance, he draws conclusions from the coloration of the paper when placed near charcoal pits and over swamps, despite the fact that Bastaudin has shown that iodine is liberated from potassium iodide by carbonic acid, while Papasogli reports that similar decomposition is accomplished by carbon dioxide (Nat'l Disp., p. 1302). These reactions easily explain the coloration of Schönbein's paper cited above.

In the same manner Dr. Prestel (Brochure, Dresden, 1865) took daily observations at Emden, from 1857 to 1864, with special reference to influence of winds and of time (day, night or season).

Dr. Ambrook (Rep. Col. Bd. Health, 1877) made similar observations, but with totally different results. To quote his words, "a careful research of the literature at my command has impressed me with the belief that the 'Ghost that Schönbein raised' will not be so easily laid, for a more contradictory set of results, from apparently equally competent observers, is hard to find than is the record about ozone."

When it comes to actual quantitative work, the statistics are even more bewildering. Most careful examination of the literature brought to light but three writers who commit themselves to figures, and in each case the data is strikingly dissimilar.

Houzeau (Ann. Chim. Phys., XXVII., 5) states that the maximum of ozone in the atmosphere is 1 part to 450,000 by weight (or 0.28 milligramme to 100 litres air). Schöne (Brochure, Mos-

cow, 1897) gives amount as varying from 1 to 10 milligrammes to 100 litres air; while H. de Varigny (Smithson, Miscell. Coll., XXXIX., 27) says that the average is 1 milligramme and the maximum is 3½ milligrammes to 100 cubic metres air. The latter statement, which means 1 to 3½ milligrammes to 100,000 litres, is at such variance with the other figures that we can only consider it as a typographical error.

These references seem to confirm us in the belief that we are among the pioneers in the field of atmospheric ozone assay, and, while conscious of the liability to err, our results are given in the hope of leading to further observations not open to the objections to which Schönbein's paper is subject. Most strongly is it hoped that the national government may take up this important work, as it is an undertaking almost beyond the scope of a single observer.

Two methods of ozone assay were employel: Hartley's, in which the arsenite is oxidizel to arsenate by the following reaction: $KAsO_2+O_3=KAsO_3+O_2$; second, Houzeau's, in which potassium iodide is oxidized to iodate, by the following method: $KI+3O_3=KIO_3+3O_2$.

The solution of potassium arsenite (corresponding to 3 grammes arsenite to 1 litre) was prepared by heating in water 1.966 grammes arsenious acid and 1.465 grammes potassium carbonate, bringing finished solution up to 1,000 c. c. Of this, portions of 20 c.c. were placed in glass stoppered bottles for the ozone test, enough space being left in each bottle for the addition of wash liquid.

The solution of potassium iodide was made by dissolving 100 grammes of the iodide in enough water to make 1,000 c.c., and portions of 20 c.c. were placed in bottles, as in the case of the arsenite.

These bottled solutions were sent to Covington, La., and the passage of air through each was performed around a hotel situated on the bank of a small stream, about a mile from the village. A significant difference, however, lay in the fact that, in February, the apparatus was placed on the veranda, while in March it was located in the yard, at least 50 feet from the house. This difference, though small, had an undoubted influence on the circulation of the air, and is important in explaining the smaller amounts of ozone found in February. In Covington, as elsewhere, March is the most windy month of the year. In February the air was com-

paratively still, but our notes show that on the 27th—date of maximum ozone of the month—it was quite windy.

The absorption of a definite amount of air was accomplished by siphoning a definite quantity of water from an air-tight container, fitted with a rubber cork, through which passed two glass tubes, one serving as the siphon, the other to admit air. To the inlet tube was attached an appropriate potash bulb—Mohr's or Liebig's —preference being given the former.

As containers, a 26-gallon oak barrel and a 10-gallon tin can were employed, the latter proving more satisfactory, because more convenient to handle and less prone to leakage. The measurement of the siphoned water (of course the volume of air admitted was identical to that of the water removed) was accomplished in two ways: (1) By measuring the amount actually siphoned off; (2) by placing a definite quantity of water in the container and then measuring the quantity left after the siphon ceased to run. Both methods gave practically identical results, and as the latter was more convenient, it was usually employed.

Each solution was directly transferred from its bottle to the absorption bulb by suction, the traces of the solution clinging to the outer lip of the bulb being carefully washed back into the bottle with distilled water. The bulb was immediately attached to the siphoning apparatus by a rubber joint, the flow of air regulated to 100-150 bubbles a minute and continued until the desired amount had passed through the solution.

As the value of both methods of assay—the iodide and the arsenite—has been assailed on the ground that similar oxidizing effect might result from the acid constituents of the atmosphere, it was deemed expedient in some of the tests to first pass the air through a solution of soda. Such tests are marked with an asterisk in the appended tables, and it will be noticed that our figures show that the criticism is groundless.

After the air had passed through the solution, the contents of the bulb were returned to the original bottle, it being necessary to employ a porcelain capsule for this purpose. The bulb and capsule were repeatedly washed with distilled water, the washings added to the solution in the bottle and the filled and securely stoppered bottles returned to Cleveland, for titration. Of each separate batch of solutions handled, one bottle each, of the iodide and of the arsenite, was returned to Cleveland as it had been sent —unopened. These solutions, as well as the original solution remaining in Cleveland, were used as control, the solutions in the

unopened bottles having undergone all the vicissitudes of their fellows, save the actual absorption of air.

To each of the potassium arsenite solutions was added 2 c.c. of a 10 per cent. solution of ammonium carbonate and 2 c.c. of a 1 per cent. starch paste. Then it was titrated with $\frac{1}{40}$ normal iodine V. S. It was noted that the color first appearing faded after about fifteen minutes, and a few extra drops were added to give a lasting color.

The following explains the calculation of the amount of ozone: $KAsO_2$; molecular weight, 145.85. O_3; molecular weight, 47.88. Since one molecule of ozone is required to convert one molecule potassium arsenite to arsenate, 145.85 grammes $KAsO_2$ equals 47.88 grammes ozone, or 1 gramme arsenite equals 0.3287 gramme ozone.

The U.S.P. says that 1 c.c. $\frac{1}{10}$ normal iodine V. S. equals 0.004942 gramme As_2O_3, and $2KOH+As_2O_3=2KAsO_2+H_2O$, we deduce that 1 c.c. $\frac{1}{10}$ normal iodine V. S. equals 0.007292 gramme $KAsO_2$; the molecular weight of $2KAsO_2$ (291.7) being to that of As_2O_3 (197.68) as 0.007292 is to 0.004942. Since 1 c.c $\frac{1}{10}$ normal iodine V. S. equals 0.007292 gramme $KAsO_2$, and since 1 gramme $KAsO_2$ equals 0.3287 gramme ozone, it follows that 1 c.c $\frac{1}{10}$ normal iodine V. S. indicates 0.0023968804 gramme ozone, and the difference between the amounts of iodine V. S. required in titrating the original solution and that acted upon by the atmospheric ozone indicates the amount of ozone acting upon the $KAsO_2$; hence, in the table given below only the difference in cubic centimetres is given, it being understood to represent, in each case, a diminution of arsenite and increase of arsenate. As $\frac{1}{40}$ normal iodine V. S. was employed, each cubic centimetre in the table indicates but $\frac{1}{4}$ of 0.0023968804, or 0.00059922 gramme ozone.

The potassium iodide solutions were treated with a very dilute hydrochloric acid (2 c.c.) and starch paste (2 c.c.), and then were titrated with $\frac{1}{100}$ normal sodium hyposulphite V. S., according to pharmacopœial directions. This method is based on the following reactions, given by Schwanert (Pharm. Chem., I., 292):

$$3O_3+6KI+3H_2O=\frac{3I_2+6KOH+3O_2}{5KI+KIO_3+3H_2O}$$

Add to this,

$$\frac{6HCl}{3I_2+6KCl+3H_2O}$$

Hence $3I_2$ equals $3O_3$, or I_2 equals O_3, or 253.06 grammes

iodine equals 47.88 grammes ozone, or 1 gramme iodine equals 0.1889-0.1890 gramme ozone.

One cubic centimetre $\frac{1}{100}$ normal hyposulphite V. S. equals 0.0012653 gramme iodine.

One gramme iodine equals 0.1889 gramme ozone; hence 1 c.c. $\frac{1}{100}$ normal hyposulphite V.S. equals 0.000239 gramme ozone.

As in the case of the arsenite, the figures given in the following table are for the difference only, and the results are expressed in milligrammes. The accuracy of this iodide assay has been questioned, but the close similarity of its results to those from the arsenite assay leads us to believe that both methods are reliable.

The results of the fifteen assays are tabulated below:

Table No. 1.

Table of Estimations with solution of Potassium Arsenite.

Solution No.	Date.	Litres of Air Passed.	Hours in Passing.	Difference in Cubic Centimetres of $\frac{n}{40}$ I. V. S.	Ozone (Milligrammes) Indicated.	Ozone (Milligrammes) per 100 Litres of Air
I.	February 21	37.640	7.	.40	.24	.63
II.	February 24	68.210	9.25	.65	.39	.57
III.	February 26	78.672	10.5	.20	.12	.15
IV.	February 27	37.400	8.	.70	.42	1.12
*V.	Feb. 28-Mar. 1	97.752	16.75	.70	.42	.43
*VI.	March 20	77.876	9.	.40	.24	.30
*VII.	March 21	77.651	9.	4.30	2.57	3.30
*VIII.	March 22-23	73.246	15.5	4.20	2.52	3.45
*IX.	March 26-29	349.637	70.	.50	.30	0.085

Table No. 11.

Table of Estimations with Solution of Potassium Iodide.

Solution No.	Date.	Litres of Air Passed.	Hours in Passing.	$\frac{n}{100}$ V. S. Sod. Hypo. in Cubic Centimetres	Ozone (Milligrammes) Indicated.	Ozone (Milligrammes) per 100 Litres of Air
I.	February 22	67.824	8.5	.15	.035	.050
II.	February 23	75.832	10.	.05	.012	.015
*III.	March 16	37.026	8.	24.5	5.85	15.810
*IV.	March 17	75.414	10.	20.2	4.83	6.40
*V.	March 19	77.612	9.	10.2	2.67	3.45
*VI.	March 23-25	194.564	57.	25.7	6.14	3.16

.In conclusion, we wish to say that the assays are deemed of as much value qualitatively as quantitatively, the mere presence

of ozone, with a reasonable degree of constancy, indicating an atmosphere free from miasmatic emanations or other impurities deleterious to life. At the same time it may be that ozone, coupled with a mild and balmy climate, has some directly antizymotic influence; in fact, the Michigan Board of Health reports seem to indicate conclusively that ozone and zymotic diseases exist in directly inverse ratio.

Lastly, our assays were made without special reference to meteorological conditions, and it is to be hoped that further investigations, with these conditions in view, will soon be made. Such work the authors hope to undertake in the near future.—*American Journal of Pharmacy*, September, 1900.

Cleveland, O., July, 1900.

THE POPULATION OF FRANCE AND THE FRENCH LANGUAGE.

The French Government can no longer blind itself to the fact that France, however great her energy, is losing ground among the nations because she is outstripped in the increase of population by her rivals. German writers have denied that the physical energy of the French is declining, and it is generally asserted by patriotic Frenchmen that the fecundity of the race is interfered with artificially. So alarmed have the people become that 150 members of the Senate demand the appointment of a committee of investigation, which is also to suggest remedies. In the motion adopted for this purpose, the Senators, according to the *Figaro* (Paris), set forth the following:

A century ago, about the time of the great revolution, France had 25,000,000 inhabitants; to-day, 38,000,000. During the same period, the population of Great Britain rose from 12,000,000 to 40,000,000, that of Germany from 15,000,000 to 55,000,000, of Russia from 25,000,000 to 100,000,000. Thus while France has increased 50 per cent., Great Britain has increased 240 per cent., Germany 270 per cent., Russia 300 per cent. Great Britain adds to her population 325,000 annually, Germany 500,000, France only 35,000.

The French language, which was formerly the most used, is now spoken by 60,000,000 people, German by 80,000,000, English by 120,000,000. England and Germany can spare from 300,000

to 400,000 emigrants annually, France only 16,000. In 1789, France, England, Germany, Austria, and Russia had together 97,000,000, of which France alone had one-quarter. To-day France has only one-eighth. England (Great Britain and Ireland) has a third more children born than France, which has only 2,000,000 less inhabitants. Yet in France the death rate of infants is 16 per cent. greater, and 150,000 French babies die before they are a year old.

That the French language is still spoken by more people proportionately than English, is due to the fact that the French endeavor to introduce it among the natives of their colonies, and in this they seem successful. In the British possessions the Government does little to encourage education among the natives, with the sole exception of Egypt, where the prevalence of French necessitates a different policy. In the French colonies, especially in Algiers and Tunis, the French educational system is introduced for the benefit of the natives, and schools as good as in France are to be found wherever they can be planted. In Europe, French thought and French learning are not as predominant as of yore. In the *Revue Bleue* (Paris), Pierre Foucin points out that this is partly due to the principles instilled into other nations by the French themselves. He says:

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"The situation has been changed very much in Europe since 1815. The nations, awakened by the French Revolution to a consciousness of their personality, have become attached more to their own languages and literature. They choose to speak German, Russian, Italian, etc., rather than French, as in the days of Frederick the Great and Catherine of Russia. Further, English as the language of trade and German as the language of science have spread everywhere. Moreover, French prestige was cruelly hurt in 1870. Yet the future of the French language is not unfavorable. A common medium for the interchange of thought is needed, and by many French is still preferred to its rivals. In Russia, Bulgaria, Roumania, Greece, Bohemia, Poland, Scandinavia, Italy, Spain, and Portugal, French is still the language of polite intercourse. Nor is the study of French really declining in Germany and England. . . . True, in the latter countries we must not expect friendship. French is the language of the enemy to the German and Englishman. He learns it for the purposes of rivalry; but for that very reason French remains the language studied by the élite, by the diplomats, men of literature, teachers, and men of the world."—From the *Literary Digest.*

INCREASE IN THE POPULATION OF FRANCE.

The fact that until 1897 for several years the birth rate in France had shown no great gain over the death rate created considerable discussion among sociologists, and even legislation was resorted to in order to remedy certain phases of the general tendency. The census returns for 1899, which have just been published, show the slight increase of 0.20 per cent. The births for the year recorded number 847,000, and the deaths 816,000, thus showing a net increase of 31,000, as against 33,000 in 1898, 108,000 in 1897, 93,000 in 1896, 39,000 in 1894, 7,000 in 1893, and 85,000 in 1889. In 1890 there was a decrease of 38,000, in 1891 of 10,000, in 1892 of 20,000, and in 1895 of 17,000.

The marriages in 1899 numbered 295,000, as compared with 287,000 in 1898. The divorces numbered 7,179, as compared with 7,238 in 1898.

CREMATION AS A LIFE INSURANCE PROBLEM.

By Frederick L. Hoffman.

Cremation, as a method of disposing of the bodies of the dead, has during recent years made most remarkable progress in this country. At the present time about 2,000 bodies are annually cremated in the principal cities of the United States, and according to data recently published for the years 1876-'98, there were cremated during this period 8,885 bodies in the various cities of this country. While there were but 190 cremations during the year 1888, ten years later, that is, during 1898, the number had reached 1,699; since then there has been a further increase, but the complete returns for the past year are not yet available. Where so much progress has been made in a novel, and to some a very objectionable, method of disposing of the bodies of the dead, still further progress may be expected in the near future, and the time cannot be far distant when for economic, sanitary, or other reasons, cremation will largely take the place of the present form of earth burial. To life insurance companies the question must be of much importance, whether this form of disposing of the bodies of the dead may not tend to develop a new danger to the business, possibly acting as an incentive to crime, especially to the most subtle one of poisoning, in view of the increased op-

portunities of destroying the evidence of guilt by the immediate incineration of the body.

As to the class of people who avail themselves of this method, it is here impossible to give the names of the large number of prominent individuals, both men and women, who have expressed themselves to be in favor of cremation, or whose bodies have been cremated instead of being disposed of by the time-honored method of earth burial. A long list of persons who advocate cremation for sanitary or other reasons, includes some of the best known members of the professions and trades, men of literature, art, science and industry, and with such outspoken advocates the time cannot be far distant when a large proportion of the bodies of the dead will be cremated instead of being buried by the method now so extensively in vogue.

Before considering the medico-legal aspects of the subject, a few general facts pertaining to cremation in this country may be of interest. The table which follows will show, for the principal cities of this country, the cremations during the period 1876-'98:

Crematories.	Before 1889.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Totals.
New York.....	236	106	160	187	186	232	243	296	330	331	466	2,773
Buffalo.	42	23	30	38	27	30	31	41	28	44	40	374
Troy.	..	..	4	10	14	15	12	10	18	14	13	110
Swinburne Island..	..	..	2	..	60	28	8	1	1	3	3	106
Waterville, N. Y...	..	..	..	..	..	1	1	6	5	4	4	21
St. Louis.....	24	20	42	60	64	72	87	96	86	118	109	778
Philadelphia.	14	28	31	51	62	68	74	88	85	78	114	693
San Francisco.....	..	..	..	..	..	42	111	154	171	268	325	1,071
Boston.	..	..	..	..	..	1	87	88	135	160	167	638
Cincinnati.	32	34	45	43	34	42	38	66	46	71	59	510
Chicago.	..	..	..	..	..	6	42	66	54	82	130	380
Los Angeles.....	12	12	17	29	41	37	38	37	37	34	58	352
Detroit.	13	14	24	21	33	47	22	31	29	44	51	329
Pittsburg.	34	8	9	13	14	13	10	13	14	16	23	167
Baltimore.	..	3	5	12	16	22	15	11	17	21	14	136
Lancaster, Pa.....	72	1	3	1	3	5	2	1	1	1	2	92
Davenport, Ia.....	..	..	..	6	7	13	8	8	9	23	17	91
Milwaukee, Wis....	..	..	..	..	..	..	..	..	21	34	30	85
Washington, D. C..	..	..	..	..	..	..	..	..	..	25	38	63
Pasadena, Cal.....	..	..	..	..	..	..	..	4	14	13	24	55
Washington, Pa....	40	..	..	..	..	..	2	..	..	..	..	42
St. Paul, Minn.....	..	..	..	..	..	..	..	..	..	2	11	13
Fort Wayne, Ind...	..	..	..	..	..	..	..	..	..	5	1	6
Totals.	519	249	372	471	561	674	831	1,017	1,101	1,891	1,699	8,885

This table is very suggestive in disclosing a definite tendency toward an increasing popularity of this method of disposing of the bodies of the dead. Societies have been formed in the principal cities for the promotion of the cause of cremation, and as a rule members are entitled to incineration at a cost of from $25 to $35.

Information as regards the sex, age and nationality of those whose bodies were cremated is available for the cities of New York and San Francisco.

In New York, out of 3,297 bodies cremated at Fresh Pond,

L. I., 2,207, or 67,4 per cent., were males, while in San Francisco, out of 1,071 bodies cremated 649, or 60.6 per cent., were males, indicating for both cities a slight preponderance of men over women in the preference of cremation over earth burial. In New York, out of the total just quoted, 150 were the bodies of boys and 118 the bodies of girls, indicating that cremation is not merely confined to the adult portion of the population.

As to nationality, the data for the two cities are rather in contrast to each other in that in New York the Germans largely outnumber every other nationality, while in San Francisco the natives are very largely in the majority over all the other nationalities combined. The data would indicate no special preference for cremation on the part of any distinct nationality, but rather point to a general spread of this practice among all the elements of the American population. These few facts would seem to warrant the assertion so frequently made by advocates of incineration that "modern cremation is not a fad, but that it has come to stay."

Naturally, the first question which arises in any discussion of the medico-legal aspects of the problem, is as regards the causes of death of those whose bodies are disposed of by this modern method of incinceration. As far as I have been able to learn, this information is available for only one city, that is St. Louis, Mo., and from the monthly health reports I have compiled the following table showing the causes of death in 528 cremations reported as having taken place during the last five years.

Principal causes of death of 528 persons cremated in St. Louis, Mo., 1895-1899: Typhoid fever, 9; septicæmia, 4; puerperal fever, 2; other zymotic diseases, 28; alcoholism, 1; cancer, 27; consumption, 49; other constitutional, 14; developmental diseases, 34; apoplexy-paralysis, 34; other nervous diseases, 36; circulatory diseases, 62; pneumonia, 41; bronchitis, 12; other respiratory diseases, 12; liver diseases, 17; peritonitis, 6; other digestive diseases, 29; urinary diseases, 40; pelvic cellulitis, 1; diseases of parturition, 3; diseases of integumentary system, 3. Accidents and violence: Poisoning, 3; gunshot wounds, 1; other accidents, 32. Suicide: Poisoning, 2; other methods, 20. Ill-defined, 6.

This summary is very interesting from more than one standpoint, but especially as to the returns showing the number of deaths from accidents and suicide. This is partly explained by the preponderance of adult males who select cremation in preference to having their bodies buried in the earth, but the fact remains that the bodies of suicides and victims of accidents are in

a perceptibly large proportion cremated, either in consequence of personal preference, or in obedience to the wishes of surviving members of the family. As to suicide, the writer has in a number of cases met with instances where the last letter of the suicide expressly provided that his, or her, body should be cremated, and to this request there is often the additional one that the ashes be scattered to the winds, or be thrown into the sea.

We have, then, in this table a small basis of fact, which may well arrest attention. The aggregate mortality includes four deaths from septicæmia, two from puerperal fever, three from other diseases of parturition, seventeen from liver diseases, six from peritonitis, three from accidental poisoning, two from suicide by poisoning, and a large number of ill-defined accidents, some of which may possibly have been additional poison cases. Naturally the question is, what steps were taken to ascertain the true cause of death in many of these cases? Was there a coroner's inquest, a careful medical examination into existing circumstances, before the body of the deceased was permitted to be cremated, and all the evidences of a possible crime destroyed? To this question I am afraid the answer is, that in the majority of the cities of this country, bodies are incinerated in identically the same manner as bodies are buried in the earth.

The seriousness of the problem of proper investigation before death is materially increased by the fact that on account of the few crematories as yet in existence in this country, bodies are often shipped from a distance to cities in which such crematories are located. Thus out of 457 bodies cremated in Buffalo, N. Y., during 1885-'99, 167, or 36.5 per cent., were those of non-residents.

For the purpose of obtaining official information on the subject, I addressed a circular letter to the health departments of various cities, and from those of most importance the replies may be summed up as follows:

In the city of New York permits for cremation are issued in the same manner as permits for burial, and the same precautions are stated to be taken in either case to ascertain evidences of possible crime. In other words, bodies about to be cremated are treated in exactly the same manner as bodies about to be buried, and no special forms are being used, or no special methods employed to discover possible crimes in connection with the latter form of the disposal of the dead. The same method seems to be followed in Chicago, where also no special forms or permits are required, it being only provided in the ordinance on the subject,

that in case of either earth burial or cremation a doctor's certificate is to be produced as to the cause of death, and if such death has been due to violence, casualty, or any other undue means, the coroner alone can authorize the disposition of the body. These precautions are, unquestionably, insufficient to guard against possible crimes, and from a medico-legal standpoint, the method in vogue in New York and Chicago must, therefore, be considered insufficient to meet legal requirements. It must be clearly kept in mind that in cremation a new condition is created, and this condition is not met by the usual methods employed to guard against the destruction of the evidence. In Chicago this danger is peculiarly increased by a provision contained in the rules and regulations of the Graceland Crematory, that persons inclined to do so may dispose of the ashes of the dead immediately after cremation by scattering the same under the chapel elms, or if the ashes are not called for within thirty days after cremation, the authorities of the crematory will dispose of the same in this manner. In other words, in either case, every possible evidence of crime inherent in the body is completely destroyed.

Similar replies have been received from Baltimore, Detroit, Davenport, Pittsburg, Pasadena and St. Louis, all indicating that no special precautions are taken with respect to the cremation of bodies as distinct from the method of earth burial. The precautions apply only to cases which appear suspicious before the body is disposed of, but in case evidence of crime should come to the knowledge of the public prosecutor after cremation, the body and the evidence itself would have been destroyed forever by the scattering of the ashes to the winds.

It will be apparent that these precautions are not sufficient to protect the best interests of the public and of life insurance companies in particular, and that in view of the sufficiently large experience of life insurance companies with poisoning cases for insurance money, special precautions would seem necessary to guard against the concealment or destruction of evidence of crime by cremation.

Such special precautions seem to be taken in Washington, D. C., where, according to the law of the District, the body of a person cannot be cremated, or otherwise destroyed, before the issue of a burial permit by the health officer, countersigned by the coroner, authorizing such cremation or disposition. The health department issues a burial permit on the presentation of the proper certificate of death, and the undertaker, if he desires to cremate the

remains, presents the certificate to the coroner for his approval, whose action in each case is supposed to be based upon the facts in that case. Bodies, of course, can be shipped elsewhere, and when they reach their destination be cremated, or otherwise disposed of without the supervision of the health department, but a body brought into the District for cremation cannot be cremated without the usual burial permit from the local health officer, duly approved by the local coroner. This method, if properly carried out, would seem to fairly meet the demands of the general public and of life insurance companies. It will be seen that in every case of cremation the coroner has to pass upon the physician's certificate, but it would also seem that this precaution could be materially improved by making it obligatory upon the coroner to personally view in each case the body of the person about to be cremated, and not until after such personal investigation grant his permit for incineration.

This practice is almost identical with the method followed in Massachusetts where, under the law of 1885, "no body of a deceased person can be cremated until the medical examiner of the district has viewed the body and made personal inquiry into the cause and manner of death, and is of the opinion that no further examination or judicial inquiry concerning the same is necessary."

In Buffalo it is the practice of the health department to demand in all cases where cremation is to take place a special statement signed by the attending physician stating that "————, M. D., being duly sworn, deposes that he has examined carefully and separately all the circumstances connected with the illness and death of ———— and that to the best of his knowledge and belief there exists no reason why the said party should not be cremated." This statement must be sworn to before a notary public, and being required in all cases of cremation, would seem to fully meet the necessary requirements, and its adoption by the health departments of other cities where crematories are located would seem desirable. The statement is sufficient to call the attention of the attending physician to the fact that the body of the deceased person is about to be cremated, which would cause him to be more than ordinarily careful in filling out the certificate of death. It would seem that the interests of life insurance companies would be fully protected if in all cases of proposed cremations an affidavit, identical with the one used by the Buffalo Board of Health, were required to be incorporated in the regular proofs

of death. By such a method the attention of the company would be called to the fact that the body of the insured person was about to be cremated and proper steps could be taken in time to prevent incineration if for any one of a large number of reasons the circumstances appeared at all suspicious or unsatisfactory.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Severe Nervous Disturbance in Cholerine.—MM. Gilbert and Castaigne have presented to the Société de Biologie a communication ("Gazette Hebdomadaire," 4th November) explaining some of their observations which prove that the severe nervous attacks so often met with in cholerine are found to exist with the presence of biliary pigments in the cerebro-rachidian fluid.

A number of patients attacked with jaundice were subjected to a puncture in the lumbar region; the cerebro-rachidian fluid contained biliary pigments only in grave cases, and the disappearance of the biliary matter coincided with the cure of the disease.

Cholerine, a name adapted from the French writers, often found in our hospitals, is marked by a furred tongue, irregular appetite, thirst, impaired digestion, a feeling of weight or distention in stomach and bowels, colicky pains and diarrhea, sometimes disappearing and again recurring, nausea, sometimes vomiting, weakness and languor. The alvine discharges are sometimes bilious, sometimes of a dirty-white color and turbid, often dark and very offensive. A remarkable feature is that the force of the disease seems to expend itself upon the nervous system, and the patient is affected with severe neuralgic pains and even distressing spasms with little or no evacuation from the bowels.

These latter phenomena, especially the nervous symptoms, are often very embarrassing, especially when they are found in robust, strong men accustomed to hard work. Other symptoms equally misleading would seem to indicate the preliminary stage of a choleric attack.

Reduction of Strangulated Hernia.—M. Fiessinger has presented to the Académie de Médicine ("Gazette Hebdom.," Nov. 4,) the results of his observations on the reduction of strangulated hernia by prolonged application of compresses of ether.

Many completely satisfactory results have been obtained in

treating hernias of different kinds in this way: umbilical, crural, inguinal; the application continued from half an hour to three hours. Strangulations were in this way reduced that had continued for more than forty hours, during which time many attempts had been made to reduce them in the usual way without any satisfactory result, in some of which vomiting of fecal matter was present.

Many of his confrères in Paris and in the Provinces have sent to the author their experience confirming the success of his method.

Prolonged application of compresses of ether have succeeded much better than application of ice, for the cold is too intense. The compress is even better than the spray in which a certain quantity of air is combined with the ether.

Although the method is so very efficacious, it is, however, prudent not to continue the application of the compress longer than thirty hours, because of the risk of giving rise to the development of gangrene within the abdomen.

HEPATISM AND BILIARY DIATHESIS.—M. Glénard expresses his satisfaction (Le Progrès Médical, Nov. 17,) at noticing that MM. Gilbert and P. Lereboullet have confirmed ideas that he has advocated for the last ten years.

Often dyspepsia masks hepatic disturbance if it is not very distinctly developed. The writer calls hepatism that form which MM. Gilbert and Lereboullet call biliary diathesis. The idea of hepatism was suggested to him by a careful examination of very many cases of disease of nutrition badly determined and of several cases of hepatic diabetes caused by alcoholism. He prefers hepatism to that of biliary diathesis, because it is more general and includes cases in which the biliary diathesis is not well marked. This diathesis is not usually hereditary; the hepatic diathesis from alcoholism is an example.

EFFECTS OF SOLAR LIGHT ON THE BACILLUS OF KOCH.—M. Jousset ("Gazette Hebdomadaire, Nov. 4,) has tried many experiments on guinea-pigs to determine the effects of solar light and even diffused light in modifying the toxic properties of the bacillus of Koch.

By inoculating guinea-pigs with tuberculous matter which had been previously exposed to solar light, or a diffused light, he remarked that the animals remained completely free from the disease or the disease was light and they survived much longer, even when the bacillus was found at the edge of the wound where the inoculation was made.

The experiments prove that the exposition to light, even when it does not completely sterilize the tuberculous matter, very considerably modifies its virulence.

THE INFLUENCE OF SENSORIAL EXCITATION ON WORK.—M. Féré has presented to the Académie des Sciences (Progrès Médical, October 13, 1900) a study in his own person of the influence of excitation on the different senses, by means of the ergographe of Messo, and has obtained clear traces that can give for each person the same ergogramme. The sensorial excitation gives an increase of labor represented on the ergogramme by an ascending line very distinct as the particular sense is observed. For example, with different colors an ascending curve may be observed representing the increase of work and the liberation of energy; noise arouses a declining energy, and the same result may be perceived in smoking a cigarette.

M. Laveran thinks that these traces explain the habit of smoking to recover from cerebral fatigue as the noise of the drum arouses the energy of the soldier.

THE THERAPEUTIC VALUE OF UROTROPIN.—Dr. Emil Suppan, of Vienna, in an article on this subject (Wiener Medizinische Blätter, July 12, 1900), says that since the time that Nicolaier first introduced urotropin for the treatment of bacterial disease of the urinary tract and the uric acid diathesis, numerous reports have been made fully confirming the therapeutic value of the remedy. Entirely apart from its effect upon the uric acid diathesis, it is indubitably to Nicolaier that we are indebted for the possession of a remedy for a whole series of severe and even, as a rule, incurable affections of the urinary passages. It is of immeasurable value in practice to possess an agent for the relief of those severe forms of cystitis occurring in old men due to prostatic hypertrophy, and leading, as a rule, to chronic pyelitis or pyelo-nephritis and all the symptoms of chronic urinary intoxication. . . .

Urotropin is, so far, the only remedy that we possess by means of which vesical catarrh and its complications can be treated internally. It is of the very greatest value as an aid to the local treatment, and in many cases can replace it entirely. The physician treating severe cases of urosepsis will be quite familiar with the difficulty of deciding upon the management of these cases of cystopyelitis in old and often greatly debilitated, even marantic, men. Is lavage of the bladder to be undertaken or not? To him urotropin will be extremely welcome and very useful. The malady is

frequently fatal, and the use of the catheter only postpones its termination. Often there is absolutely no better method of handling these cases than to administer quinine to combat the fever, give urotropin for the urinary poisoning, and watch the case for a day or two. It was our former custom to catheterize at once, and wash out the bladder once, twice, or oftener daily; or in hopeless cases to institute permanent drainage of the bladder. In spite of this the mortality from uræmia, anuria, and hæmorrhage was very great. We can certainly spare the patient pain and discomfort, and perhaps help and save him by avoiding catheterization and employing urotropin. In these severe cases instrumentation should only be used from time to time for the evacuation of the bladder when the patient cannot do so spontaneously.

DIAGNOSIS OF CEREBRO-SPINAL MENINGITIS.—M. Rendu read (Le Progrèso Médical) a memoir of M. Dartigolle to the Société Médicale des Hopitaux on the difficulty of diagnosis in cerebro-spinal meningitis. He cites three cases in which the coma of spinal meningitis might be easily confounded with uremic coma.

VARICELLA.—M. Merklen has described (Gazette Hebdomadaire, October 21, 1900), to the Société Médicale des Hopitaux, some cases of varicella that differ materially from the classical form of the disease. The adherents of the recognized form, says M. Merklen, maintain that the disease is preceded by premonitory symptoms and general indisposition, but the Doctor has found the eruption to precede the recognized symptoms; it has made its appearance on the body before attacking the face. The fever has been very variable; in three cases it was very distinct, while in one it was entirely absent.

When the vesicles have suppurated the crusts did not fall before three weeks instead of the usual ten days.

Again, the vesicles were most numerous around small sores, with which three of the children were afflicted.

The suppuration of the vesicles of varicella is the consequence of some secondary infection rather than the disease itself.

To this the Progrès Médical adds the remarks of M. Faisans, who has observed cases that developed sixteen days after exposure to the contagion. One of the children had no fever nor suppuration, but from the beginning the vesicles were escarotic, and gave rise to cicatrices similar to those from variola. Another child with varicella had fever but no suppuration and the vesicles left no cicatrices.

M. Sevestre entertains the opinion of M. Merklen: varicella does not usually show the eruption first on the face. He thinks also, as M. Faisans, that the suppuration in varicella is secondary. Most frequently, he thinks, when there is no suppuration, the cicatrices are caused by the children tearing the crust from the primitive vesicle.

M. Siredey cites a case of varicella in which the diagnosis was indisputable, and, although the little patient was in close relations with eleven others during the first day of the sickness, not one of them was attacked with the disease.

M. Levestre remarked that it is only in varicella that the lesions of the skin determines a special localization of the eruption. This rule does not hold in cases of scarlatina.

THE TREATMENT OF "RIGGS'S DISEASE." At the recent meeting of the Royal Medical and Chemical Society (London Letter, Therapeutic Gazette, Aug. 15, 1900), Mr. Godlee read a paper on some after-complications of *Pyorrhea alveolaris,* the so-called "Riggs's disease."

Where the trouble is limited to a single tooth. it may be radically dealt with by its extraction, without fear of a septic wound. In routine treatment success usually attends the application of antiseptics between the tooth and the gum. Godlee's treatment consists in removing all the tartar and syringing the pockets sedulously and persistently with hydrogen peroxide or some other antiseptic or astringent substance.

EDITOR'S TABLE.

SANITARIAN, JANUARY, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

THE SANITARIAN signalizes the beginning of its forty-sixth volume and twenty-eighth year with a renewal of its emblem—the American Eagle carrying in its talons sprigs of the health-giving Eucalyptus and the pain-destroying Poppy—suggestive at once of prevention and cure. (The apparent inconsistency of forty-sixth volume and twenty-eighth year is due to the circumstance that for one year THE SANITARIAN was published weekly, and numbered accordingly.)

The wonderful marsh-drying properties of the Eucalyptus are

known to everybody who has studied the tree. Marshes are well known to be the abode of mosquitoes, and just now mosquitoes are in evidence as never before, as means of propagating disease. Hence the efficacy of the Eucalyptus may be contemplated in a two-fold purpose.

The Red Poppy continues, as ever, the unrivalled *nepenthe,* of classic renown. In a Latin poem by Landor, Ceres is said to have created the Red Poppy to assuage her anguish during the search for her lost daughter; hence, in the language of flowers, the significance of the Red Poppy is *consolation.*

THE FIRST PUBLIC HEALTH CONGRESS IN THE UNITED STATES.

Anent Dr. Bryce's elaborate survey of "Public Sanitation in the Nineteenth Century," on other pages, giving the Centennial year as the year of the first Public Health Congress in America, he inadvertently omits notice of the important congresses of 1857, '58, '59 and '60, held in Baltimore, Philadelphia, New York and Boston, respectively, all well attended, those in New York and Boston particularly so, and by many of the most distinguished physicians and other progressive citizens in America. The proceedings of those in New York and Boston are contained in volumes of 727 and 284 pages, respectively, and comprehend reports and papers on subjects of public sanitation which compare favorably with any on the same subject that have been written since. At the conclusion of the Boston congress resolutions were adopted and a committee appointed with a view to a permanent and national organization—as subsequently effected in the organization of the American Public Health Association in 1872—which purpose was interrupted by the war of the rebellion.

TENEMENT-HOUSE REFORM.

All readers of THE SANITARIAN are more or less familiar with the various attempts that have been made from time to time to accomplish tenement-house reform, and the reason of their failure. The investigations of the present Commission are encouraging in so far as they have opened up the chief obstacle to success—the various and shifting responsibility underlying the abominable system that has hitherto obtained under the divided and severally obstructive responsibilities of the Health, Building, Fire and Police Departments. That the responsibility should be centered has long been evident to all who have knowledge of the complications. But it would be difficult to adduce stronger evidence of the need of it than that given by the Sanitary Superintendent, at a recent exam-

ination of the Commission. On his attention being called to three tenement-houses where in each house during the last three years there have been twenty-two cases of consumption, he was asked, "Were you aware of this?"

"Perfectly. I visited those houses myself."

"Why were those houses not condemned?"

"Because there was no tangible reason why the houses should be so infected, and because to this day we cannot tell what caused it. The city now has claims for $3,000,000 for condemned houses outstanding against it, and that is enough. During the past year we have condemned 344 tenements. In most cases the defects were promptly remedied, even before the five days' time allowed the tenants to get out."

With the responsibility centered in the Health Department there would be no such outstanding claims on doubtful authority. Evidently the further the oversight and regulation of tenement-houses is separated from the Health Department the greater the opportunity offered for lax practices and a gradual lowering of the standards of construction and management. This is not because the Health Department is immaculate, but because mismanagement by it in this department of its work would be reflected in epidemics and an increased death rate, and there would be no escaping responsibility for the conditions which produced such results. Moreover, it was a great wrong in this connection, ten years ago, to take from the Health Department the control of lighting, ventilation, and plumbing in new buildings and vest it in the Building Department. The reason for this change was that owners and builders of dwellings designed for a multiple tenancy wanted a wider latitude and better assurances of immunity in violating the law than the Board of Health would give them.

The deprivation was followed by an increase in the number of badly constructed and dangerous tenements. It is our conviction, from long attention to the subject, that the most effective step which could be taken in the matter of tenement-house reform would be to restore to the Health Department the exclusive supervision and control or so much of it as relates to conditions affecting life and health. This would mean, practically, the reënactment of the "Tenement-House act" of 1887. It was the best tenement-house law we have had, and it is doubtful if we could have a better one. It fixed the responsibility where it properly belonged, and if it had remained operative until the present time, it would have changed for the better all the remediable evils which are now under investi-

gation. The coöperation of the Building, Fire, Police and Street Cleaning Departments will be required. A new department attempting to work without such coöperation would be practically powerless for good.

CRUELTY TO SCHOOL CHILDREN.

Anent recent reports of the broken-down health of some of the pupils of the Girls' High School of Brooklyn, in consequence of too close confinement and overstudy, our attention has been attracted to the report of a discussion at a recent meeting of the Board of Education of Somerville, Massachusetts, of which board Drs. George A. Miles and Alvah B. Dearborn are members.

The discussion was provoked by the majority and minority reports of the Committee on Rules upon the order of Dr. Miles, introduced at the previous meeting, asking that the rules be amended to restrict home studies in the grammar schools to pupils of the ninth grade. Home studies are now given in the seventh, eighth and ninth grades. The majority report favored the change.

The minority report, presented by Mr. Jones, said such a change would involve a revision of the course of study; that most pupils between the ages of twelve and fourteen needed home study, in the case of many, to keep them out of mischief; with dull pupils to keep them up with the others; also to fix the habit of study.

Dr. Miles said he had no desire to criticise the schools or the teachers; he simply criticised the course of study at present in vogue. He was convinced that the pupils are being overworked; that they are forced to learn a great deal in a short time, and that they forget quite as quickly as they learn. They have to study too much that is not practical and too much in the evening.

The doctor quoted from statistics showing that in four cities, in 1889, 16,000 pupils were taken out of public schools because their nervous systems had been wrecked by overstudy. On account of night study, and anxiety to have lessons ready for the next day, pupils grow puny and pale, dream of their lessons and wake tired and without appetite. Such studies as botany, physiology, etc., he thought, should not be forced upon the younger pupils; their precious time would be better improved if devoted to reading and writing.

Dr. Dearborn agreed with Dr. Miles.

Apropos to the foregoing, and as showing the purblindness of some boards of education and some school teachers to knowledge obtainable from their own school books on physiology and hygiene

and the published observations of hygienists for many years, we here adduce an abstract of a contribution to the first number of THE SANITARIUM, April, 1873, by the late C. R. AGNEW, M. D., the distinguished oculist of New York:

"Some time ago, a girl of twelve years of age, the child of healthy parents, was brought to me broken down in her eyes. Inquiring into the minute history of her case, I found that she had for a long time had an average of five daily tasks to prepare and recite; that these tasks filled the early part of the day, from nine to two, and absorbed most of the afternoon and evening; that she had shown some appearance of being fagged, until finally her teacher, desiring no doubt to apply an additional stimulant, had added to the ordinary lessons the four following questions to be answered the next Monday, this being Friday:

1. The names of the principal rivers in the United States.
2. The names of the principal colleges in the United States.
3. The Coral Islands of the Pacific.
4. The recent earthquakes in South America."

For more than a quarter of a century THE SANITARIAN has frequently exposed such and other tasks and conditions imposed upon school children, alike disgraceful to boards of education and school teachers generally. Nevertheless they are still prevalent.

THE NEED OF REST.

Professor Eustace H. Miles, formerly lecturer at Cambridge University, England, and the head authority on athletics in that institution, in an article on Fallacies About Training ("Saturday Evening Post"), writes that:

"A serious evil in the modern training system is the constant tension of the nerves and muscles. At Cambridge I used to watch my athletic pupils, and none of them seemed to have acquired the power of repose. They were always on the stretch. When the time came near, for instance, for the University boat race or the football match, the tension reached an extreme, and the men seemed quite unable to be at their ease. It is strange that, while the trainers perpetually teach their men to exercise, and try to teach them how to exercise, they never teach them to rest. The whole of Nature seems to work on the principle of alternations; first work, then rest. We see it in day and night; in breathing out and breathing in. I need not give other instances, many of which can be found in one of Emerson's Essays. What I wish to insist on here is that, while we teach men to exert themselves, and to strive, and

to tie themselves up into knots, we seldom or never teach them to relax themselves, to be at rest, and to undo their nerves and muscles. Two of the most popular and sensible of modern writers, namely, Professor James, of Harvard University, and Anna Payson Call, have drawn the attention of their readers to the need of relaxation. It is Americans especially who need to relax, to smooth themselves out, and, for example, to let their arms and hands hang limp and heavy. If the business man were to give up only three minutes each day to standing with his knees bent, and with his arms and hands hanging down quite loose and limp, and with a contented smile on his face, and with his mind as empty as possible, the difference in his state of feeling during the day would be almost beyond belief."

"MOLASSES."

The Board of Health has taken action to prevent the sale of spurious molasses in New York, if possible. According to the latest report of the Department of Agriculture in Washington a great part of the molasses output is adulterated with glucose, sorghum and other agents. To make the molasses light in color it is put through a bleaching process which requires the use of peroxide of hydrogen, bone black, sulphurous acid, metallic sulphites, sulphuric acid, sulphur fumes, chloride of zinc and other chemicals.

"Molasses," as sold here, is nothing but glucose syrup with a flavoring of molasses. It is sold for from eighteen to twenty-one cents a gallon. The pure article retails for about thirty-five cents a gallon. There is less profit in it than in the spurious article, so the retailers buy the latter.

BAD SAUSAGES.

Secretary Hurty, of the Indiana State Board of Health, has issued an appeal to the press and people to assist him in inducing the Legislature to establish a hygienic laboratory in connection with the State Health Board. He says:

"Indiana has industries which pour waste material into streams. These industries have a capital of over $20,000,000, pay out in wages over $5,000,000 annually, pay thousands of dollars taxes and use up several millions of dollars' worth of crude material annually. Give the State Health Board a laboratory and methods will soon be found for the sanitary disposal of factory wastes. It is an economic business move."

The appeal ends with the following little story, told by Dr. Vaughn, of Michigan University, at English's Opera House:

"I was in Toledo on professional business. With the city health officer, I visited a sausage factory where sausages were made from condemned meat. Some of the meat showed tapeworms, and some parasites. Some was putrid, some from diseased animals. I asked, 'Why do you allow this?' The officer replied: 'Oh, there is no Ohio law preventing such manufacture, but there is a law preventing sale of such stuff.' 'Where is it sold?' I asked. 'Mostly in Indiana,' was the reply."

Last summer there were twenty-three cases of sausage poisoning reported in Indiana. How many occurred which were not reported is unknown.

CHOICE AMERICAN PORK IN GERMANY.

Says a traveler for one of the largest of the Chicago pork-packing houses, to the New York "Times": "It was while I was making my trip through Bavaria a few months ago that I discovered a rather clever game that the Danes are playing on the good people of Germany who have such a hatred of the American hog. Germans are very fond of pork, and the sort that commands the highest price among the imported products is the Danish article. I was in an establishment where they were disposing of lots of pork when a little twist in the method of packing attracted my attention. I carefully kept an eye on the 'made-in-Denmark' pig products after that, and made a visit to Denmark in my Sherlock Holmes capacity. After a lot of investigation I at last clinched things, and then was able to prove, if necessary, that the Danes had been 'doing' both Germans and Americans. Those thrifty Danes, who have always been comfortably large buyers of our pork, had been taking good Chicago-packed pork, changing the packings and labels, and sending it to Germany, where it was sold as pork of Danish making. Then I went off to the nearest rathskeller and had a quiet laugh to myself over the way the Germans were being taken in. Naturally, I kept my mouth shut about the discovery until I reached home and reported to the firm. As we happen to have a pretty good sort of a trade with Denmark, I'm not saying a word now that will interfere with our business. But I can't help having a quiet chuckle when I hear of one of those German Agrarian outbreaks in the Reichstag about the danger of eating and importing American pork products."

SOUND POULTRY AND HOW IT IS KEPT.

Of that kind which is unsound, Boston seems to have recently had an unusual supply. In the few days preceding the Thanksgiv-

ing rush they seized and condemned between three and four tons of bad birds which came from the West, showing that the condition of the market, while vastly better than last year, was not much above the average. One short spell of warm weather in the West, whence came the majority of the turkeys, contributed largely to the number of bad birds, this spell coming just at the time when the fowls were being killed for the Boston market.

The New York "Times," referring to this subject, says: "In these days, when every one is eating poultry, the New England woman has her days of woe when marketing. Go where she will she cannot find drawn poultry on the stands. At home she has never bought any other kind. She revolts at first because she declares that poultry sent to market containing the viscera intact cannot possibly be so good as that sent 'clean'; that is, with the internal organs removed. Then, too, her economical mind protests against paying for a lot of dead weight that she does not use and that is removed from a fowl as soon as the butcher has weighed it. Finally, she is forced to smother her New England prejudices or go without poultry. She won't do the latter, for a cardinal principle in her housewifery has been that turkeys, geese, ducks and chickens were specially created for the Thanksgiving and Christmas seasons. Her butcher will only explain to her that poultry always comes to market with the 'innards' intact, and that it is the only way in which it can be had. So she talks it over with the head of the house—nominal at least—and if he cares to appease his wife's misgivings he goes on an exploring expedition to satisfy his curiosity and her prejudices. Then he learns that the whole question of drawn versus undrawn poultry was thrashed out years ago by the Health Department of the city in a series of official investigations, and that it was proved beyond dispute that fowls would keep better and longer when undrawn than when drawn. Practical tests with hung fowls were made, birds being killed from the same flock and at the same time for the tests. In every instance the undrawn fowl of whatever sort kept sweet and free from taint much the longer time—days, in fact. There is a safeguard, too, in the fact that when one buys an undrawn fowl she knows she is not buying one that has been disinfected by treatment in a soda bath. That was a trick of the trade when drawn poultry was commonly to be had in New York markets. Having learned this, the head of the house is able to satisfy his wife that the best way to buy poultry, in New York at least, is to buy it when undrawn. There are some sorts of small game birds that may be had drawn or undrawn

as one wishes, but even with these the demand is almost entirely for the undressed and undrawn bird."

HOW DANGEROUS DISEASES ARE SPREAD.

A short time ago a child died of diphtheria in Baltimore, and the mother of the child, having no mourning clothes of her own, borrowed some from a friend. After the funeral, which, under the rules of the Health Department, must take place within twenty-four hours after death, the funeral garments were returned. A day or so afterward diphtheria developed in the family of the owner of the clothes. Dr. C. Hampson Jones, Assistant Health Commissioner, when asked about the case, said that there was no telling how frequently disease was carried from one house to another in this way.

"People who have a sudden death in the family," he said, "often find themselves without proper funeral garb, and, in the case of infectious diseases where the law requires almost immediate burial, are obliged to fall back upon their friends or relatives to obtain the clothes. In this way the germs of the disease are very easily transferred from one house to another. But

VILLAINOUSLY

one Killoran, a street car conductor on a much-used line in New York, and performing duties that required ordinary intelligence, has not only neglected to protect himself by vaccination—which would not have cost him a single penny or interfered in any appreciable degree with his work—but has, while suffering with *smallpox,* continued to collect fares from his crowded passengers for days after his illness had developed. His claim that he did not know what was the matter with him is unworthy of consideration. If he did not know, he must have suspected, for he belongs to a class that reads the papers more or less and has opportunities for frequent discussion of current events. Unquestionably he contributed to the widespreading of the disease in the city, and he did it with a willfulness which the circumstances do not mitigate to the extent of relieving him from a heavy moral responsibility that ought to be also a legal one. Something of his burden, however, might well be transferred to the company that employs him. It is the obvious duty of the street railway corporations to see to it that the men with whom a very large fraction of the city's population is forced to come into daily and close association are neither voluntary nor involuntary distributers of infection. Nevertheless, this would-be murderer with smallpox is no less deserving of punishment than he would have been for administering arsenic.

INFECTIOUS DISEASE SPREAD BY MANGLING MACHINE.

In the parish of Lambeth (London) within less than three weeks 105 cases of infectious disease were reported to the medical authorities recently, comprised mostly of typhoid and scarlet fevers. The investigations into the outbreak revealed the distribution of the contagion in an unusual manner. The locality affected is inhabited mostly by the artisan class, the wives of whom, after washing their clothes, are in the habit of sending them to some neighbor or neighbors who possess a mangling machine, to have them wrung out or mangled. Consequently, the infected linen taken from one house to another to be so treated contaminated the mangle, which conveyed the infection to other non-infected clothes.

THE DANGER OF INFECTION BY SALIVA SPRAY.

HERMANN KOENIGER has recently shown by a series of experiments ("Zeitschrift f. Hygiene u. Infectionskrankheiten," xxxiv, 119) that minute drops of saliva emitted during the acts of speaking, coughing and sneezing, in a room where there is no perceptible air current, may be driven forward to a distance of twenty-one feet and more or less scattered in all directions; upward to at least half that distance, and even behind a person speaking or coughing.

The saliva drops are expelled only when the expired air meets with a certain amount of resistance. They are not disseminated by a simple act of expiration without effort, nor in the pronunciation of vowels. Their dispersal during speech takes place very differently in different individuals. It is trifling from speaking in a deep voice, but may be quite forcible as a result of whispering. The germs thus carried into the air do not remain long suspended. In Koeniger's experiments they were almost always deposited within an hour—most of them in ten minutes—when doors and windows were tightly closed and the air was still.

Koeniger agrees with Fluegge in thinking that it is the constitution of the saliva drops which prevents the germs from remaining longer in suspension. These drops are real microscopic balloons, each having in its centre an air bubble. When this bursts the contained germ, being heavier, falls to the ground. The author's experiments show that colonies of bacteria developed upon the surfaces of sores originate not from a single germ, but from several.

The diffusion of saliva drops is most marked when caused by coughing or sneezing. If the germ is bigger than the *Bacillus prodigiosus*—as large, say, as the *Bacillus mycoides*—it is carried a shorter distance, and the resulting danger is proportionally less.

Hence the dispersal of germs by this means is most to be feared in the case of the smaller micro-organisms, such as those of influenza, of the plague, whooping-cough, pneumococci, streptococci and staphylococci.

The bacillus of tuberculosis, that of the plague and that of diphtheria are larger than the *Bacillus prodigiosus,* but smaller than the *Bacillus mycoides.*

The more pathogenic microbes there are in the mouth the greater the danger of infection. Washing out the mouth and frequent gargling will lessen the number of such diphtheritic bacilli as are capable of removal, and so far will be of service. Simply holding the hand or a handkerchief before the mouth prevents the ejection of saliva charged with tuberculous bacilli. Talking should be avoided during an operation. Other precautionary measures will readily suggest themselves in connection with this important subject.

SINGULAR FATALITY OF ALCOHOLISM?

London, Nov. 27.—The Manchester mystery has not yet been solved and the excitement over the sickness in the city grows. A similar outbreak is appearing in neighboring places, including Liverpool, Stourbridge and Chester. Many reports are current and some of them are undoubtedly exaggerated for the sake of sensation. An official report by Dr. Tattersall, the health officer of Salford, issued yesterday, deals especially with the recent sickness and deaths. It says that the deaths from alcoholism in Salford during the first four months of the year were twenty-two, and that during the past four months they numbered sixty-six. Dr. Tattersall confirms the report of the discovery of arsenic in the sugar employed in making the commoner grades of beer, but there has not yet been time to make the quantitive analysis to ascertain whether the arsenic reaches the beer in sufficient quantities to cause the symptoms that have been noted.

Others who are investigating the subject say that the origin of the trouble is undoubtedly in contaminated sugars, but they are not yet prepared to vouch for the arsenic theory. Dr. Reynolds testified at the inquest in the case of one of the victims that he bought a sample of beer at Hulme, which is within the municipal limits of Manchester, and found that it contained any amount of arsenic. Dr. Niven, the health officer of Manchester, has ordered an analysis of the cheap candies and jams. There are now about a hundred cases of the mysterious sickness in the Manchester hospitals, ninety at Liverpool, and a large number are reported from the towns and villages in a wide area.

STATE MEDICINE IN TEXAS.

The Public Health and the State's Duty to Protect It. By M. M. Smith, M. D., Austin.

Maladministration of Public Medical Affairs in the State of Texas. By H. A. West, M. D., Secretary of the Texas State Medical Association, Galveston.

Report of the Committee on a State Board of Health, Texas State Medical Association.

Three pamphlets, all to the same purpose—an endeavor to enlighten the people of the State on preventable diseases and to secure effective legislation for the protection of the public health.

They show that under existing laws a "diploma" from any so-called medical college in any State, even from those known to be fraudulent, is recognized as a license to practice medicine! That numbers of such diplomas are purchased and registered in Texas by unprincipled and ignorant adventurers who call themselves doctors and impose themselves upon the public as such, to the constant danger of human life. There seems to have been hitherto a deeply rooted idea in the minds of influential members of the Legislature that the various bills emanating from and urged by the State Medical Association for the regulation of medical practice and the establishment of a State board of health, have been mainly for the selfish motive of advancing the interests of the medical profession; that the sole end the Association has been endeavoring to accomplish has been the organization of a great medical trust, and meanwhile the Legislature has been purblind to the suffering of the people. Notoriously when one of these perambulating, perennial quacks visits a town, his coming is heralded in the press with glittering promises to cure every ill to which human flesh is heir; its columns are filled with testimonials as to his miraculous cures; the hopes of the poor, misguided populace are raised to the highest possible pitch; they are ready and willing to make any sacrifice to secure the services of the so-called Divine Healer; women sell their jewelry; men pawn their household goods to obtain money and pour it into the lap of a miserable liar and cheat, who, having stolen the livery of heaven to serve the devil in, masquerades in the guise of a physician.

The public health system, as at present constituted, is shown to be essentially deficient, no matter who may be at the head of it. It is composed of a health officer, appointed by the Governor, and a few quarantine officers stationed at the principal ports and upon the Mexican border, with special reference to smallpox and exotic

disease, with no supervision of, and no apparent care whatever for, the local conditions promotive of preventable diseases a thousand times more prevalent and dangerous to human life than those to which their attention is exclusively devoted. There seems to be no recognition of preventive medicine except as relates to quarantine, and the review of the *modus operandi* of this service shows it to be an obstacle to the better service of, and much less obstructive to, commerce than, and withal without any expense to the State, if wholly left to the national quarantine service. That the legislators of the State should be neglectful of these conditions and purblind to the existence of such diseases as tuberculosis, typhoid fever, diphtheria, scarlet fever, measles, whooping-cough and malarial diseases—all more or less preventable in some degree throughout the State—and with no effort to stay them, is a reflection upon the intelligence of the people and a disgrace to the law makers. They are reminded that it has been truthfully said that every death from a preventable disease is a crime, yet they ignore their responsibility for the prevalence of such criminality so long as they neglect the performance of their duty to the State and to the people who elect them.

If it be true, and we think it is, that an evil is more than half overcome when it is thoroughly exposed, this exposure of the lamentable need of an efficient State health service in Texas should be speedily followed by legislative action to that end. It is inconceivable that the Legislature can be insensible to the facts adduced in these pamphlets.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

State of New York: The sanitary districts into which the State is divided are as follows: *Maritime District,* includes New York, Brooklyn, Long Island, Staten Island and Westchester County; *Hudson Valley District,* all the counties on either side of the Hudson River, except Westchester, to and including Albany and Rensselaer; *Adirondack and Northern District,* the northern section of the State, the counties of Washington, Warren, Hamilton, Essex, Clinton, Franklin, St. Lawrence, Jefferson and Lewis; *Mohawk Valley District,* Schenectady, Scoharie, Saratoga, Montgomery, Fulton, Herkimer and Oneida counties; *Southern Tier District,* the seven counties along the southern border of the State; *East Central District,* Sullivan, Delaware, Otsego, Madison, Chenango, Onondaga and Cortland counties; *West Central District,* Cayuga, Tompkins, Seneca, Schuyler, Ontario, Yates, Livingston, Genesee

and Wyoming counties; *Lake Ontario and Western District,* Oswego, Wayne, Monroe, Orleans, Niagara and Erie counties.

The State Board of Health Bulletin for October, 1900, reports the number of deaths for the month to be 9,676, 575 less than the preceding month, the death rate having decreased from 16.5 to 16.0.

Maritime District, 3,728,427: Total deaths, 5,578; death rate, 17.5; deaths under five years, 1,923; from cerebro-spinal meningitis, 19; typhoid fever, 108; malarial diseases, 33; scarlet fever, 12; measles, 10; erysipelas, 9; whooping cough, 25; croup and diphtheria, 158; diarrhœal diseases, 293; acute lung diseases, 692; consumption, 702; cancer, 197.

City of New York, 3,444,675: Total deaths, 5,148; death rate, 17.6; deaths under five years, 1,305; from cerebro-spinal meningitis, 19; typhoid fever, 97; malarial diseases, 31; scarlet fever, 12; measles, 10; erysipelas, 8; whooping cough, 23; croup and diphtheria, 142; diarrhœal diseases, 246; acute lung diseases, 647; consumption, 663; cancer, 135.

Borough of Manhattan, 1,851,887: Total deaths, 2,837; death rate, 17.9; deaths under five years, 992; from cerebro-spinal meningitis, 10; typhoid fever, 47; malarial diseases, 9; scarlet fever, 3; measles, 3; erysipelas, 5; whooping cough, 16; croup and diphtheria, 49; diarrhœal diseases, 134; acute lung diseases, 414; consumption, 342; cancer, 110.

Borough of The Bronx, 202,092: Total deaths, 370; death rate, 21.6; deaths under five years, 130; from cerebro-spinal meningitis, 3; typhoid fever, 5; malarial diseases, 7; scarlet fever, 5; measles, 3; croup and diphtheria, 7; diarrhœal diseases, 16; acute lung diseases, 25; consumption, 85; cancer, 9.

Borough of Brooklyn, 1,169,796: Total deaths, 1,638; death rate, 16.5; deaths under five years, 581; from cerebro-spinal meningitis, 5; typhoid fever, 39; malarial diseases, 8; scarlet fever, 3; measles, 3; erysipelas, 3; whooping cough, 5; croup and diphtheria, 66; diarrhœal diseases, 83; acute lung diseases, 176; consumption, 210; cancer, 56.

Borough of Queens, 153,734: Total deaths, 221; death rate, 16.9; deaths under five years, 71; from typhoid fever, 5; malarial diseases, 7; scarlet fever, 1; measles, 1; whooping cough, 2; croup and diphtheria, 12; diarrhœal diseases, 9; acute lung diseases, 21; consumption, 19; cancer, 6.

Borough of Richmond, 67,166: Total deaths, 82; death rate, 14.5; deaths under five years, 31; from cerebro-spinal meningitis, 1;

typhoid fever, 1; croup and diphtheria, 8; diarrhœal diseases, 4; acute lung diseases, 11; consumption, 7; cancer, 4.

Typhoid Fever. Later reports show increasing prevalence of typhoid fever, particularly in the Borough of Brooklyn. For the four weeks ending December 1, the number of deaths from it in the Boroughs of Manhattan and Brooklyn were respectively 37 and 41. For the corresponding weeks in 1899, 41 and 20.

Smallpox, too, for the last six weeks, up to December 15, has been cropping out at various places in the Borough of Manhattan—and a few in Brooklyn—in all about 100 cases, with 3 deaths. Nevertheless, the cases are so promptly rescued and isolated that there is no fear by the Health Department of its gaining a foothold. Moreover, there is a praiseworthy faith in the virtues of vaccination, insomuch that there soon will be an insufficient number of susceptible subjects to sustain it.

The Bertillon System in classifying the causes of death has been adopted in the Bureau of Records, beginning January 1, 1901.

Hudson Valley District, 700,000: Total deaths, 987; death rate, 16.0; deaths under five years, 249; from cerebro-spinal meningitis, 4; typhoid fever, 42; malarial diseases, 1; scarlet fever, 4; measles, 1; whooping cough, 9; croup and diphtheria, 19; diarrhœal diseases, 100; acute lung diseases, 71; consumption, 106; cancer, 38.

Albany, 100,000: Total deaths, 144; death rate, 17.0; deaths under five years, 39; from typhoid fever, 5; scarlet fever, 1; whooping cough, 1; croup and diphtheria, 9; diarrhœal diseases, 5; acute lung diseases, 12; consumption, 14; cancer, 7.

Adirondack and Northern District, 390,000: Total deaths, 467; death rate, 14.1; erysipelas, 1; whooping cough, 5; croup and diphtheria, 3; diarrhœal diseases, 65; acute lung diseases, 31; consumption, 37; cancer, 22.

Mohawk Valley District, 400,000: Total deaths, 496; death rate, 14.7; deaths under five years, 138; from cerebro-spinal meningitis, 2; typhoid fever, 21; malarial diseases, 1; measles, 4; erysipelas, 1; whooping cough, 2; croup and diphtheria, 14; diarrhœal diseases, 45; acute lung diseases, 27; consumption, 47; cancer, 16.

Utica, 56,383: Total deaths, 87; death rate, 18.0; deaths under five years, 25; from typhoid fever, 1; malarial diseases, 1; erysipelas, 1; croup and diphtheria, 4; diarrhœal diseases, 9; acute lung diseases, 7; consumption, 4; cancer, 4.

Southern Tier District, 425,000: Total deaths, 493; death rate, 14.2; deaths under five years, 71; from cerebro-spinal meningitis,

3; typhoid fever, 24; malarial diseases, 2; scarlet fever, 4; erysipelas, 1; whooping cough, 3; croup and diphtheria, 11; diarrhœal diseases, 43; acute lung diseases, 31; consumption, 32; cancer, 27.

Elmira, 40,000: Total deaths, 47; deaths under five years, 12; from cerebro-spinal meningitis, 1; typhoid fever, 1; malarial diseases, 1; scarlet fever, 1; diarrhœal diseases, 5; acute lung diseases, 2; consumption, 2.

Binghamton, 45,000: Total deaths, 76; deaths under five years, 15; from typhoid fever, 5; scarlet fever, 3; croup and diphtheria, 8; acute lung diseases, 5; consumption, 4; cancer, 3.

East Central District, 406,425: Total deaths, 466; death rate, 13.1; deaths under five years, 86; from cerebro-spinal meningitis, 3; typhoid fever, 22; scarlet fever, 2; erysipelas, 1; croup and diphtheria, 4; diarrhœal diseases, 43; acute lung diseases, 19; consumption, 40; cancer, 18.

Syracuse, 108,374: Total deaths, 126; death rate, 13.7; deaths under five years, 29; from typhoid fever, 6; croup and diphtheria, 2; diarrhœal diseases, 12; acute lung diseases, 8; consumption, 16; cancer, 4.

West Central District, 325,000: Total deaths, 362; death rate, 13.1; deaths under five years, 55; from typhoid fever, 14; whooping cough, 1; croup and diphtheria, 4; diarrhœal diseases, 38; acute lung diseases, 23; consumption, 29; cancer, 26.

Lake Ontario and Western District, 860,272: Total deaths, 827; death rate, 11.0; deaths under five years, 219; from cerebro-spinal meningitis, 5; typhoid fever, 25; scarlet fever, 2; measles, 1; whooping-cough, 9; croup and diphtheria, 15; diarrhœal diseases, 85; acute lung diseases, 73; consumption, 85; cancer, 32.

Buffalo, 352,219: Total deaths, 330; death rate, 11.3; deaths under five years, 112; from cerebro-spinal meningitis, 2; typhoid fever, 14; scarlet fever, 1; whooping-cough, 7; croup and diphtheria, 5; diarrhœal diseases, 47; acute lung diseases, 31; consumption, 32; cancer, 10.

Rochester, 162,436: Total deaths, 175; death rate, 12.7; deaths under five years, 41; typhoid fever, 5; croup and diphtheria, 7; diarrhœal diseases, 10; acute lung diseases, 16; consumption, 21; cancer, 12.

For the State, 7,110,000: Total deaths, 9,676; death rate, 16.0; deaths under five years, 2,864; from cerebro-spinal meningitis, 36; typhoid fever, 283; malarial diseases, 37; scarlet fever, 24; measles, 24; erysipelas, 13; whooping-cough, 54; croup and diphtheria, 228; diarrhœal diseases, 712; acute lung diseases, 967; consump-

tion, 1,078; puerperal diseases, 62; diseases of the digestive system (not diarrhœal), 955; diseases of urinary system, 760; diseases of circulatory system, 830; diseases of nervous system, 934; cancer, 376; accidents and violence, 540; old age, 429; unclassified, 1,334.

POPULATION OF NEW YORK PRISONS.

The State Prison Commission reports that the population of the State prisons and reformatories and county penitentiaries shows a net increase of 6 for the past year, and a decrease of 2,615 during the past five years. The population of the State prisons is 3,380, of whom 99 are women. The net increase in the population is 158, of whom 28 are women. The total in the penitentiaries is 291, a decrease of 30. The Elmira Reformatory has a population of 1,276, a decrease of 107. The two reformatories for women have a total population of 389, a decrease of 15.

The State Board of Arbitration to-day received official notice that it had been given the Grand Prix medal at the Paris Exposition. A full set of its reports and a sketch of the board's work by its clerk, B. F. Supple, was sent to the exposition, and its members naturally congratulate themselves that the highest prize should be awarded them for the work done by the board. New York's board received the next prize, a gold medal. The State Boards of Health and Education, and the Bureau of Statistics, also received Grand Prix medals. Massachusetts contributed one-twentieth of the United States exhibit at the fair, and received one-tenth of the prizes.

ALABAMA.—A committee of the State Board of Health, of which Dr. W. H. Sanders is chairman, has memoralized the General Assembly of Alabama to assist further in increasing the efficiency of the health organization of the State and thus afford greater protection to the health of the people.

The memorial calls attention to the fact that the organized medical profession is seeking all the time to prevent disease and urges that every county should have an efficient health officer with adequate remuneration for his service.

CALIFORNIA.—Los Angeles, 102,479: Total deaths in October, 135; death rate, 16.78; deaths under five years, 15; from cerebro-spinal meningitis, 2; typhoid fever, 4; acute lung diseases, 6; consumption, 32; cancer, 4.

COLORADO.—The State Board of Health reports, Dec. 1, that there have been 5,608 deaths in the State during the nine months

from Jan. 1 to Oct. 1, 1900; 1,012 of the dead were infants less than one year old. There were 3,379 deaths of males and 2,229 deaths of females in the nine months. While the report nominally is for the past two years, it really covers the last eight years, no report having been published from 1893 to the present time.

Denver, 133,859: Total deaths in October, 184; death rate, 16.32; deaths under five years, 28; from typhoid fever, 10; scarlet fever, 2; diphtheria, 1; acute lung diseases, 11; consumption, 46; cancer, 4.

CONNECTICUT.—The State Board of Health Bulletin reports for October: Total deaths, 1,208, in 167 towns having an aggregate population of 907,470. This was 62 less than in September, and 172 more than in October of last year, and 110 more than the average number of deaths in October for the five years preceding the present. The death rates were 15.5 for the large towns, 17.6 for the small towns, and 15.9 for the whole State; deaths under five years, 317; from cerebro-spinal meningitis, 5; typhoid fever, 40; scarlet fever, 6; measles, 3; diphtheria and croup, 29; whooping-cough, 10; malarial fever, 2; diarrhœal diseases, 111; acute lung diseases, 88; consumption, 119. The Secretary urges special attention to the beginnings of infectious diseases. "Stop the beginnings." For many generations this proverb has been a guiding law in relation to infectious diseases. It is of the highest importance. He also urges regular inspection of the public schools, for the detection of the primary cases of infectious maladies and their removal before the infection is permitted to attack the other children in the schools.

DISTRICT OF COLUMBIA, 278,718. Report for the three weeks ending November 24: Total deaths, 294; death rate, 18.22; from typhoid fever, 23; diphtheria, 12; acute lung diseases, 36; consumption, 52; cancer, 6.

The Health Officer's report for the last fiscal year shows that 221 persons died from typhoid fever in the District. This was the largest number in any one twelve-month except in the fiscal year ended June 30, 1896, when it was 228. Since the close of the last fiscal year there have been upward of 100 deaths from this cause.

The total number of deaths from all causes during the fiscal year ended June 30, 1900, was 5,953, a decrease of 73 in the actual number of deaths since last year. The death rate was therefore 21.37 per thousand, a decrease of 0.28. The average annual death

rate during the past five years has been 20.95. Of the decedents 3,325 were white and 2,628 colored, the decrease in the former being 47 and in the latter 26.

GEORGIA.—A bill has been introduced in the Legislature providing for the creation of a State Board of Health. Under the provisions of the bill the board is to be composed of nine members, four of whom are to be selected by the Georgia Medical Society from its membership, and the Governor shall appoint the remaining five, one of whom shall be a sanitary engineer. They are to serve two years and are to take cognizance of the health interests of the State, make sanitary investigations from time to time, and inquire particularly into epidemics.

ILLINOIS.—Chicago, 1,698,575: Report for September: Total deaths, 1,884; death rate, 14.82; deaths under five years, 733; from typhoid fever, 34; scarlet fever, 4; measles, 1; whooping-cough, 24; croup and diphtheria, 42; diarrhœal diseases, 174; acute lung diseases, 135; consumption, 190; cancer, 78.

The Illinois river is reported to be a purer stream since the opening of the drainage channel than before. The noxious elements in the Chicago sewage have been eliminated within a distance of 100 miles from the city. The dilution of the sewage with the waters of Lake Michigan has benefited the Illinois valley and improved the quality of the water. The contention of St. Louis that running water does not purify itself has been effectually and emphatically demonstrated to be untrue by three independent analyses of thousands of samples of water taken from the stream below the Robey street entrance to the drainage channel and the waterworks above the city of St. Louis.

INDIANA.—The State Board of Health reports the total number of deaths in Indiana during October as 2,933, a decrease as compared with September of 188 and as compared with October, 1899, of 76. The annual death rate, as based upon the month's returns and the United States census of this year, is 13.7. The rate for October, 1899, was 13.4. The stillbirths for this October were 126. The deaths under one year were 542; one to five, inclusive, 305, and sixty-five and over, 636.

IOWA.—Dr. George W. Webster has been appointed a member of the State board of health to fill the vacancy created by the resignation of Dr. R. F. Bennett. Dr. Bennett resigned to accept the superintendency of the Asylum for the Insane at Anna, Ill.

KANSAS.—The Secretary of the State Board reports smallpox for November, 1900, at eleven places, with an aggregate of 40 cases.

Fifteenth annual report, 1899, shows that, excepting smallpox, there has been nothing like an epidemic of any contagious or infectious disease. Smallpox was reported at 30 places, with an aggregate of 466 cases, with 39 deaths. The returns of vital statistics are confessedly incomplete—not because of the insufficiency of law, but of neglect of physicians, health officers and assessors, who do not appreciate the importance of the subject. The law appears not to be sufficiently mandatory. As reported: Marriages, 7,115; births, 20,010; deaths, 7,395. Deaths from chief causes: Pneumonia, 729; consumption, 607; heart diseases, 504; grippe, 306; diphtheria (and croup), 313; typhoid fever, 259; paralysis, 246; cancer, 178; ascites, 170; bronchitis, 150; meningitis, 129; measles, 116; whooping-cough, 77. The subjects now most engaging the attention of the Board are the prevention of river pollution and the proper disposal of sewage.

LOUISIANA.—New Orleans, 300,000—90,000 colored: Report for October: Total deaths, 526—206 colored; death rates, whites, 18.40; colored, 27.46; total, 21.12; deaths under five years, 126—36 colored; from cerebro-spinal meningitis, 3; typhoid fever, 13; malarial fevers, 36; scarlet fever, 1; diphtheria, 6; measles, 1; smallpox, 1; acute lung diseases, 37; consumption, 68; cancer, 11.

MAINE.—At the meeting of the State Board of Health, Nov. 12, the three subjects which particularly engrossed the attention of the board were a sanitarium for consumptives in this State, a chemical and bacteriological laboratory, and a regulation of embalming and the transportation of the remains of persons who have died of infectious diseases. The chief subject of discussion was sanitariums for consumptives.

The results which have been attained in the sanitariums for consumptives in many parts of the world, even in climates more rigorous and apparently more unfavorable than that of Maine, have revolutionized, in a considerable degree, the question of the importance of a change of climate for the average consumptive. In Massachusetts, the Adirondacks, Canada, Northern Germany, Scotland, Sweden, Norway and Russia, the percentage of cases of consumption cured have been encouragingly large. They prove that under the modern hygienic methods as carried out in well-conducted sanitariums thousands of consumptives, otherwise doomed, may be saved to their families. So important is the mat-

ter that the Board feels that, though not strictly official business, it is amply justified in taking the initiative in bringing the subject before the people of the State. The plan as outlined by the Board is a personal appeal to as many as possible of the representative and influential persons in all parts of the State to become members of a prospective "Maine State Sanitarium Association."

MARYLAND.—Baltimore, 541,000. Report for October: Total deaths, 800; death rate, 17.74; deaths under five years, 286; from typhoid fever, 26; croup and diphtheria, 25; diarrhœal diseases, 61; acute lung diseases, 63; consumption, 89; cancer, 34.

MASSACHUSETTS.—Boston, 560,892. Report for September: Total deaths, 883; death rate, 18.89; deaths under five years, 357; from typhoid fever, 16; measles, 2; scarlet fever, 8; whooping-cough, 9; croup and diphtheria, 44; acute lung diseases, 56; consumption, 78; cancer, 37. A recent bulletin of the State Board of Health shows a steadily diminishing death rate during the past four years. The death rate of 1899 was only 17.4 per 1,000 of the population, a lower rate than that of any period of the last half century except 1859 and 1867, which were respectively 17.33 and 17.00.

MICHIGAN.—The Secretary of the State Board reports for November, 1900, compared with the preceding month, pneumonia, scarlet fever and diphtheria were more prevalent; and cholera infantum, dysentery, cholera morbus, inflammation of bowels, diarrhœa and remittent fever were less prevalent.

Of the most dangerous communicable diseases, cerebro-spinal meningitis was reported present at 4 places; whooping-cough at 20 places; measles at 29 places; smallpox at 37 places; diphtheria at 75 places; scarlet fever at 168 places; consumption at 174 places, and typhoid fever at 254 places.

There were 2,461 deaths returned to the Secretary of State for the month, corresponding to a death rate of 12.5. The number of deaths was 356 less than for the preceding month, although the number for November exceeded that returned for November, 1899, by 111. Of the deaths, 369 were of infants under one year, 168 of children aged one to four years, both inclusive, and 701 deaths of persons aged sixty-five years and over. The more important causes of death were: Pulmonary tuberculosis, 137; other forms of tuberculosis, 51; typhoid fever, 138; diphtheria and croup, 90; scarlet fever, 25; measles, 9; whooping-cough, 2; pneumonia, 165; diarrhœal diseases under five years, 80; cancer, 125; accidents and violence, 111.

There was some diminution in the high mortality from typhoid fever, although the number of deaths returned for the month was over double the number reported for the corresponding month of last year. Diphtheria and pneumonia showed slight increase.

MINNESOTA.—St. Paul, 165,000. Report for October: Total deaths, 111; death rate, 8.07; deaths under five years, 29; from typhoid fever, 7; scarlet fever, 1; croup and diphtheria, 3; acute lung diseases, 9; consumption, 10; cancer, 5.

Minneapolis, 240,000. Report for October: Total deaths, 151; death rate, 8.27; deaths under five years, 36; from cerebro-spinal meningitis, 1; typhoid fever, 12; scarlet fever, 1; diphtheria, 18; acute lung diseases, 13; consumption, 15; cancer, 4.

Winona, Nov. 30.—Secretary Bracken of the State Board of Health, who was called to Winona to-day to investigate the epidemic that is going the rounds of this city, gives out the statement that the disease is evidently smallpox of a mild character and that the per cent. mortality as he has known the disease is about 2 per cent. It is said there are over three hundred cases. In one school there were found to be twelve cases, but no notice was taken at the time of discovery more than to send the pupils suffering with the disease home.

NEW JERSEY.—Newark, 250,000. Report for four weeks ending November 24: Total deaths, 283; death-rate, 15.33; deaths under five years, 115; from cerebro-spinal meningitis, 1; typhoid fever, 5; scarlet fever, 1; croup and diphtheria, 15; acute lung diseases, 16; consumption, 47; cancer, 14.

Paterson, 106,067. Report for October: Total deaths, 131; death rate, 14.92; deaths under five years, 48; from cerebro-spinal meningitis, 1; typhoid fever, 4; whooping-cough, 2; diarrhœal diseases, 12; acute lung diseases, 7; consumption, 18; cancer, 7.

NORTH CAROLINA.—The State Board of Health Bulletin reports for October, from twenty towns having an aggregate population of 146,450—59,524 colored: Total deaths, 257—114 colored; death rates, whites, 19.7; colored, 23.0; total, 21.0; deaths under five years, 99—38 colored; from typhoid fever, 17; malarial fevers, 20; diphtheria, 3; whooping-cough, 2; measles, 1; pneumonia, 9; diarrhœal diseases, 37; consumption, 23.

NORTH DAKOTA.—Grand Forks, Nov. 28.—An epidemic of diphtheria of alarming proportions prevails in and about Manvel. The disease has existed for some time, but its character was not

recognized, and there have been public gatherings in which those exposed have freely mingled. Superintendent Irwin of the county board of health has closed the schools in Manvel, Turtle River, Harvey and Anstett districts.

OHIO.—State Board Bulletin for four weeks ending October 27: Number of places reporting, 70; aggregate population, 1,447,894; diphtheria (including membraneous croup), 693 cases, 86 deaths; typhoid fever, 417 cases, 7 deaths; scarlet fever, 212 cases, 38 deaths; whooping-cough, 36 cases, 2 deaths; measles, 34 cases, no deaths.

Cleveland, 395,000. Report for October: Total deaths, 444; death rate, 14.6; deaths under five years, 145; from cerebro-spinal meningitis, 3; typhoid fever, 14; scarlet fever, 4; croup and diphtheria, 35; acute lung diseases, 45; consumption, 37; cancer, 18.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for three weeks ending November 24: Total deaths, 1,234; death rate, 16.4; deaths under five years, 354; from typhoid fever, 16; scarlet fever, 4; whooping-cough, 4; croup and diphtheria, 70; acute lung diseases, 169; consumption, 132; cancer, 57.

Pittsburg, 321,616. Report for four weeks ending November 24: Total deaths, 372; death rate, 15.0; deaths under five years, 119; from cerebro-spinal meningitis, 2; typhoid fever, 28; scarlet fever, 5; measles, 3; whooping-cough, 10; croup and diphtheria, 18; acute lung diseases, 48; consumption, 20; cancer, 15. *Typhoid fever* continues prevalent in Reading; is also reported prevalent in the new coal town of Byrne. *Diphtheria* is prevalent in York, Woodbury and in the borough of Mt. Joy, near Lancaster.

TEXAS.—Galveston, Dec. 5.—Galveston is threatened with an epidemic of typhoid fever. There is a great deal of sickness prevalent in the city and physicians say that the majority of cases develop typhoid symptoms. There are twenty-one cases now under treatment in St. Mary's Infirmary, and seven at the Sealey Hospital, and more would be at the hospital if rooms could be obtained. The outbreak and spread of the disease are due to the unsanitary condition of the city, and the impurity of the cistern water, the only means of supply for many families. Many persons are crowded together in buildings and tents that barely protect them from the inclemencies of the weather.

UTAH.—Salt Lake City, Dec. 1.—Smallpox is reported preva-

lent at Kaysville, Centreville, Hunter, and at Latterday Saints' College.

VERMONT.—At the meeting of the State Board of Health, at Burlington, December 4, the board was reorganized as follows:

President, Dr. C. S. Caverly, of Rutland; Secretary, Dr. H. D. Holton, of Brattleboro; Treasurer, Dr. T. R. Stiles, of St. Johnsbury. Committees and health officers were appointed as follows: Sewerage and Drainage, Dr. Stiles; Laboratory, Dr. Stiles and Dr. Caverly; Schoolhouses, Dr. Holton. Health officers—Dr. Stiles for Grand Isle, Franklin, Orleans, Caledonia, Lamoille and Essex; Dr. Holton for Washington, Orange, Windsor, Windham, and Dr. Caverly for Chittenden, Addison, Rutland and Bennington counties.

Complimentary to Dr. J. H. Hamilton, who had resigned, the following resolutions were adopted:

Therefore, be it Resolved, That this board desires to record its regret at Dr. Hamilton's step in retiring from the board; and

Resolved, That the board appreciates the past services of Dr. Hamilton and recognizes the difficulty which confronts it of at once filling his place; and

Resolved, That the members feel a personal regret in severing the pleasant relations which have heretofore existed; and further

Resolved, That a copy of these resolutions be sent to Dr. Hamilton and a copy be furnished for publication.

VIRGINIA.—The Medical Society of Virginia, under the new law regulating the State Board of Health, during the recent session in Charlottesville, nominated the following-named gentlemen for commission by the Governor of Virginia as members of the Virginia State Board of Health for the term beginning January 1st, 1901: Drs. Paulus A. Irving and Landon B. Edwards, Richmond; Rawley W. Martin, Lynchburg; Vernon G. Culpeper, Portsmouth; Lewis E. Harvie, Danville; John H. Neff, Harrisonburg, and John T. Graham, Wytheville. Their term of office is four years.

WASHINGTON.—Seattle, 90,000. Report for October: Total deaths, 62; death rate, 8.26; deaths under five years, 12; from typhoid fever, 1; scarlet fever, 1; acute lung diseases, 13; consumption, 5; cancer, 1.

WEST VIRGINIA.—Martinsburg, Nov. 21.—An epidemic of typhoid fever prevails in this city to an alarming extent. A conservative estimate places the number of cases in the city at 200.

WISCONSIN.—Milwaukee, 290,000. Report for October: Total deaths, 290; death rate, 11.8; deaths under five years, 100; from typhoid fever, 11; scarlet fever, 1; measles, 1; whooping-cough, 4; croup and diphtheria, 17; acute lung diseases, 17; consumption, 18; cancer, 17.

PORTO RICO.—The death rate is reported to be steadily diminishing, the most remarkable decrease having been in the city of Ponce, due largely to improved conditions brought about by the local authorities. In August there were in Ponce 651 deaths; in September, 462; in Adjuntas the decrease was from 308 to 250, and in Junua Dian from 325 to 251. These are places that have been before mentioned in reports from the island as most sickly.

With respect to the large mortality in Ponce, it must be borne in mind that it is the place to which refugees flock in hope of obtaining food and succor in their misfortune, and is resorted to by the lazy and the debilitated, the mortality of whom properly belongs to other places. In San Juan there have been more extensive sanitary improvements than elsewhere. Before the American occupation water closets were practically unknown there. Now there are hundreds of them and of baths, fitted with modern plumbing.

HAVANA.—Major Gorgas' most recent report, for the month ending October 31: Deaths, 507; death rate, 25.08.

This report compares favorably with the corresponding month for the ten preceding years, being smaller than the lowest, that of 1899, when there were 74 deaths from yellow fever. While this is large for October, it was not, as has been reported in many papers of the United States, as large as that for October in many of the preceding years. Of the 287 cases of yellow fever occurring during the month, 62 were American and 225 were Spaniards; 8 Americans died and 51 Spaniards, giving a rate respectively of 12.90 for the Americans and 22.66 for the Spaniards.

MOSQUITO INOCULATION.

Washington, Dec. 17.—Surgeon-General Sternberg to-day received a cable message from Major Walter Reed, of the Medical Department, stationed at Havana, saying that the recent experiments with mosquito inoculation have been entirely successful in 80 per cent. of the cases under treatment. These experiments are being conducted by Dr. Reed and other surgeons of the army near Havana, with the approval and aid of Major-General Wood, commanding the Division of Cuba. They are based upon conclusions reached by Major Reed and other medical officers, recently ap-

pointed to conduct scientific investigations with reference to the acute infectious diseases prevalent in Cuba.

So far the inoculation has been confined to Spanish immigrants intending to settle in Cuba and desirous of making themselves immune to yellow fever. These persons have voluntarily presented themselves for inoculation, with a full understanding of the nature of the experiment.

PEKIN INVITES PESTILENCE.

Pekin, Nov. 16.—Sanitary conditions here are becoming serious. Since the foreign occupation many Chinese have died of smallpox and other infectious diseases. Fearing that their funerals would be interfered with, they have kept most of the coffins containing their dead in their houses and courtyards. The question of removing garbage has become one of grave importance. As the natives are forbidden to deposit refuse in the streets, there is now an enormous accumulation in their dwellings and yards, which threatens a serious epidemic. In view of the large number of troops in and near the capital, the consequences of such an outbreak would be frightful. Smallpox, which is always prevalent, is much more malignant during the winter season, and the danger here is now alarmingly increased.

BOOK REVIEWS.

INDEX CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, U. S. ARMY. SECOND SERIES, VOL. V.: ENAMEL-FYUNER. Washington: Government Printing Office.

This volume fully maintains the excellence of the work from the outset. "It includes 6,825 author-titles, representing 2,695 volumes and 5,957 pamphlets. It also contains 7,645 subject-titles of separate books and pamphlets, and 40,045 titles of articles in periodicals. The Library now contains 135,895 bound volumes, and 229,991 pamphlets."

The particularly notable title-summaries of books, pamphlets and articles in periodicals, for their number, in this volume are: Engineering, Sanitary Engineering, etc.; Epidemics; Epilepsy; Eye; Fever and Fevers—this last occupies 229 pages.

PROGRESSIVE MEDICINE, VOL. IV., 1900. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. 8vo,

cloth, 428 pages, 69 illustrations. Per annum, in four cloth-bound volumes, $10.00. Lea Brothers & Co., Philadelphia and New York.

Each succeeding volume of this quarterly emphasizes the increasing success with which its editor and contributors are realizing their novel aim in producing in a narrative form the record of the year's medical advance. The issue for December more than fulfils expectations and will well repay careful reading. But little more than a cursory analysis of its contents is possible:

The first article, by Einhorn, deals with Diseases of the Stomach and Allied Organs. Considerable space is very profitably devoted to the latest methods of medicating the stomach. The rest of the article contains many valuable hints on diagnosis and treatment. The portion on "Floating Liver" is of importance and should prove interesting to all. In discussing Fractures about the Elbow-joint, Tuberculosis of the Bones and Joints and Coxa Vara, Bloodgood has written a most instructive article. He has also devoted some ten pages to the important subject of Gonorrhœal Arthritis. The Therapeutic Referendum has greatly expanded since last year. In its hundred pages will be found excellent accounts of all that has been accomplished with the newer remedies and additional light is thrown on many of the better known drugs. Dr. Belfield contributes a compendious and authoritative article on Genito-urinary Diseases. The important subject of Diseases of the Kidney is ably handled by John Rose Bradford; while Physiology, by Albert P. Brubaker, is of interest more particularly to specialists in that branch, but may be read with profit by all. Under the subject of Hygiene, Dr. Henry B. Baker deals with the causation of diseases due to toxins, their modes of communication and methods of control. The illustrations throughout the volume are clear and aid materially the descriptions.

STUDENTS' EDITION, A PRACTICAL TREATISE OF MATERIA MEDICA AND THERAPEUTICS, with special reference to the Clinical Application of Drugs. By JOHN V. SHOEMAKER, M. D., LL.D., Professor of Materia Medica, Pharmacology, Therapeutics and Clinical Medicine, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia; Physician to the Medico-Chirurgical Hospital; Member of the American Medical Association, of the Pennsylvania and Minnesota State Medical Societies, the American Academy of Medicine, the British Medical Association; Fellow of the Medical Society of London, etc., etc. FIFTH EDITION. Thoroughly Revised. 6¼x9¼ inches. Pages vii-770.

Extra cloth, $4.00, net; sheep, $4.75, net. F. A. Davis Company, Publishers, 1914-16 Cherry street, Philadelphia.

"So many new remedies from the chemical laboratory and from the vegetable kingdom have been introduced during recent years" that the author has decided, in this the fifth edition of his work, to divide it into two independent issues; one, that which is before us, THE STUDENTS' EDITION, and the other, which will be forthcoming shortly, the PHYSICIANS' EDITION. This edition includes nothing beyond knowledge of officinal remedies and preparations of the pharmacopœias of the United States and Great Britain, together with some of their chemical modifications. As the metric system of weights and measures is now used almost exclusively in works of pure science, and is becoming more and more géneral in medicine, in order to facilitate its adoption and the student's practical knowledge of it, in this edition the doses in the text are all given in the decimal terms, together with their equivalents in the English system.

The author has made excellent use of his long experience as professor of materia medica and therapeutics in so limiting and adapting this branch of medicine to the need of students as to greatly facilitate their efforts in gaining knowledge of it.

THE PHYSICIAN'S VISITING LIST, FOR 1901. FIFTIETH YEAR OF ITS PUBLICATION. Philadelphia: P. Blakiston's Son & Co.

Probably the most favorably known physician's list extant. Hence no review of its excellent arrangement is called for. It comprehends all of the essential elements of ready reference, record and special memoranda. It is gotten up in its usual excellent style, and in volumes suited to requirements, for 25, 50, 75 or 100 patients per day, with corresponding prices, $1.00, 1.25, 2.00 and 2.25. Will be sent by the publishers, postage prepaid, upon the receipt of price.

SEXUAL DEBILITY IN MAN. By FREDERIC R. STURGIS, M. D., formerly Clinical Professor of Venereal Diseases, Medical Department, University of the City of New York; ex-Visiting Surgeon to the City Hospital, Blackwell's Island; Author of "A Manual of Venereal Diseases;" one of the Authors of "A System of Legal Medicine," etc., etc. Large 12mo., pp. 432. Price $3.0). E. B. Treat & Co., Publishers, 241 and 243 West 23d street, New York City.

The author of this work has, for many years, devoted his attention exclusively to venereal and genito-urinary diseases. He has

long been considered by the medical profession in this country as an authority in his specialty, and his distinguished ability has received ample recognition abroad. This work is a noteworthy one, for in it Dr. Sturgis gives the results of his extensive experience covering the observations of many years. Prefatorily he tells us that "the principal reason for writing this book is to introduce to the reading medical public sundry opinions the writer holds upon sexual weaknesses in men which, although they may be at variance with ideas generally received in this country, he is convinced from experience are correct. Thus in the chapter on Masturbation he has combated the old and time-honored belief that indulgence in this habit is the necessary prelude to both physical and mental degeneration, and, while not glossing over the dangers which may, under certain conditions, result from the habit, he has attempted to point out the folly of the hysterical denunciations which have been heaped upon it by pseudo-philanthropists and ignorant medical men. The question of castration in the case of masturbating lunatics has been brought up afresh for discussion, and the author has frankly stated his reasons for believing, that, under certain circumstances, such a procedure would not only be justifiable, but proper. He has also separated Spermatorrhœa from pollutions, aiming to show that the two are absolutely distinct and separate diseases; that spermatorrhœa is not the finale of pollutions, but is a disease *sui generis,* the symptoms, course, and treatment of which are entirely different from the latter. He has also striven to correct the foolish and ridiculous idea that the man afflicted with spermatorrhœa is foredoomed to impotence and sexual uselessness.

"In the chapter on Prostatorrhœa he has attempted to lay down the natural history and symptoms of this variety of disease, and has protested against the loose and unscientific method of regarding it as practically the same as prostatitis, with which latter disease, in his opinion, it has absolutely nothing in common."

No where else to our knowledge is the subject of this work based upon more extended observation, or so intelligently discussed. We commend it as the best, indeed, as the only thoroughly scientific demonstration of fallacies which have hitherto obtained on the subject of the treatise.

HUMAN UNDERSTANDING. By DAVID HUME. "The Religion of Science Library." 12mo., paper, pp. 180. Price 25 cents. Chicago: The Open Court Publishing Co.

An unannotated reprint, merely, of the ENQUIRY CONCERNING

HUMAN UNDERSTANDING, made from the posthumous edition of 1777, together with HUME'S charming autobiography and the eulogistic letter of Adam Smith, usually prefixed to the "History of England."

No review of this book is called for. No one with any pretence to knowledge of the mind, no library, can afford to be without it; and the Open Court Publishing Co. have done an exceedingly praiseworthy service in placing it so easily accessible to all readers.

CONTEMPORARY LITERATURE.

HOW WE HAVE GROWN IN A CENTURY.

The actual increase of population in the ten years is about 13,225,000. The rate of increase in the period from 1880 to 1890 averaged about 2½ per cent. each year. The rate for the past ten years has been about 2 1-10 per cent. annually. This diminution in the rate is, in considerable part, due to the diminished volume of immigration. The individual effectiveness of the American population is so high that, in respect to material resources and power, it will be conceded by every one that the United States is well in the forefront of the nations. The structure of the British empire is such that, in a comparison of population, commerce, and other statistical data, there is no more reason for adding Australia to England than for adding Mexico to the United States. Our population at the beginning of the nineteenth century was, in round figures, 4,300,000 white people and 1,000,000 negroes, the total being 5,308,483. Curiously enough, we had almost exactly the same population at that time as Ireland, which in 1801 had 5,395,456. After gaining very rapidly for four decades, Ireland since 1845 has declined steadily, until now it has a population of about 4,500,000. The comparison of our national position at the beginning and the end of the nineteenth century makes it clear enough that, from the standpoint of the world at large, the progress of the United States has been the most noteworthy feature of the age. When France assisted us to gain our independence, her population was at least five or six times as great as ours. Ours is now just twice as great as hers. Ten years ago our population was about 25,000,000 more than that of the United Kingdom of Great Britain and Ireland; and now it is about 35,000,000 more. In 1910, unless normal conditions are much disturbed, we shall have a population of 90,000,000, while the British Islands will have about 44,000,000.

And we shall thus have more than twice as many people as the mother country.—From "The Progress of the World," in the "American Monthly Review of Reviews" for December.

"THE FUTURE OF THE ANGLO-SAXON RACE"

is the title of an article contributed to the December "North American Review" by that gallant and versatile Irishman, Lord Charles Beresford. The dominance of the Anglo-Saxon race at the present day is scarcely disputed. Its representatives in Great Britain and the United States control very nearly one-fourth of the total land surface of the globe, and more than a quarter of the entire population of the world; and no preceding race has exerted such a vast influence upon the lands and the people of the earth. But can this imperial race reasonably expect to avoid the causes of racial decay which have in the past brought Egypt, Persia, Babylonia, Greece and Rome from a position of undisputed preëminence to one of unquestioned subordination? Lord Charles Beresford answers this question hopefully, although he sees occasion for serious alarm in the power which the plutocrat and the money-bag now wield among both the British and American people. Says he:

"The sea which threatens to overwhelm it is not the angry waters of the Latin races, or of envious rivals, but the cankering worm in its own heart, the sloth, the indolence, the luxurious immorality, the loss of manliness, chivalry, moral courage and fearlessness which that worm breeds. This danger, which overthrew Babylon, Persia, Carthage, Athens, Rome, and many other mighty nations and races in the past, now threatens the race to which we belong; but to it we oppose what they never possessed, on anything like the same principles or to the same extent as we—the power of democracy. 'The voice of the people is the voice of God,' says an old Latin proverb, and in the main that is true. The masses may err, they may misinterpret their own wishes. They may need powerful and educated leaders, able to guide popular sentiment into the right channels and to prevent it doing damage by overflowing its banks; but the voice of the people in the end is right, because in the mass they are neither self-seeking nor self-serving."

THE PURSUIT OF HAPPINESS.

One of the latest writings of the late Charles Dudley Warner was an essay for the December "Century," entitled "The Pursuit of Happiness."

Perhaps the most curious and interesting phrase ever put into a public document is "the pursuit of happiness." It is declared to

be an inalienable right. It cannot be sold. It cannot be given away. It is doubtful if it could be left by will.

The right of every man to be six feet high and of every woman to five feet four was regarded as self-evident until women asserted their undoubted right to be six feet high also, when some confusion was introduced into this interpretation of this rhetorical fragment of the eighteenth century.

But the inalienable right to the pursuit of happiness has never been questioned since it was proclaimed as a new gospel for the New World. The American people accepted it with enthusiasm, as if it had been the discovery of a gold-prospector, and started out in the pursuit as if the devil were after them.

If the proclamation had been that happiness is a common right of the race, alienable or otherwise, that all men are or may be happy, history and tradition might have interfered to raise a doubt whether even the new form of Government could so change the ethical condition. But the right to make a pursuit of happiness, given in a fundamental bill of rights, had quite a different aspect. Men had been engaged in many pursuits, most of them disastrous, some of them highly commendable. A sect in Galilee had set up the pursuit of righteousness as the only or the highest object of man's immortal powers. The rewards of it, however, were not always immediate. Here was a political sanction of a pursuit that everybody acknowledged to be of a good thing.

LIFE-SAVING EXTRAORDINARY.

In the December "St. Nicholas" Lieutenant Worth G. Ross, U. S. Revenue Cutter Service, tells of an extraordinary rescue on the shore of Lake Superior. A schooner and steam barge were stranded at Marquette, and after making heroic efforts all day long to succor the survivors, the would-be rescuers telegraphed to a regular life-saving crew. Some one proposed this as a last resort. It seemed like a forlorn hope, for the nearest station was then at Ship Canal, a hundred and ten miles distant! However, the chance, meager as it looked, was considered worth taking, and arrangements were at once begun to bring the life-boat and its crew. A telegram, which had to be carried six miles by a tug, was sent to the keeper of the station, telling of the peril of the sailors. The managers of the railroad offered a special train to bring the surfmen and their apparatus to Marquette. As soon as the keeper received the message, he and his men, with the life-boat, wreck-gun and all necessary appurtenances, were taken on the tug, which steamed as

fast as she could to Houghton, where was waiting a train consisting of an engine, a passenger-coach, and two flat-cars. It took the life-savers but a short time, with the helpers who volunteered, to put the apparatus on board the cars and secure it, after which the train sped swiftly out into the night on her merciful errand, followed by the resounding cheers of the crowd of persons who had come upon the scene.

Perhaps no life-saving crew had ever before started out on a journey so exceptional. They were stirred to the noblest impulses by its intense significance, and had determined among themselves to do or die in the perilous task before them. Although the track was heavy with snow, the powerful locomotive raced on at high speed through the driving tempest, at times almost reaching the rate of a mile a minute. The coating of snow made the engine and cars look strangely grotesque as the train pulled into the railway station at Marquette, after a run (with its necessary stoppages) that had never been matched under the circumstances. It was nearly midnight when the crowd of expectant and cheering men helped the life-savers and their appliances from the cars. Wagons and sleighs had been provided to take them to the lake, and also a plentiful supply of food for the half-starved sailors when they should be brought ashore.

After a hard trip along the dark beach, in the wash of the surf, which was thick with driftwood, the station-crew finally arrived abreast of the vessels. A throng of people were there before them, anxiously awaiting their arrival. The bonfires which had been kept burning gave needed light to the workers, and, in view of the great seas that were tumbling in, it was thought best to attempt first a rescue by means of lines. One was fired over the steam-barge amidships, but it appears that the sailors were prevented from getting it by the rush of breakers across the decks. The keeper now decided to use the boat. There were two reefs to pass, over which the waves were dashing with frightful fury. The life-boat crossed the first one, shipping three seas on the way; but, the rudder becoming disabled, the men were obliged to return. While repairs were being made another shot was fired over the vessel, but no one reached the line.

At daybreak the boat was again launched, and by strenuous and undaunted exertions the oarsmen held to their work, succeeded in crossing the reefs, alive with foaming breakers, and got alongside the barge. By this time the lifeboat was sheathed with ice, the seas having frozen on the planking, and being thus weighted down,

it was considered prudent to take in only nine of the vessel's crew. With these a start was made for the shore, which was regained after another valiant and perilous passage.

Two more trips were made to the wrecks by the life-savers, their boat at times being flooded and partially beaten back, and once nearly thrown end over end on the reef. The men themselves were drenched with icy water, which made their work much harder to endure.

Their heroic and indomitable efforts were crowned with full success, every one on the two vessels, twenty-four in all, being saved. Many of these were almost frozen and nearly starved, and were immediately taken by the citizens to the fires on the beach where there was food.

I cannot do better here than to quote from the report of the general superintendent of the Life-Saving Service touching this memorable achievement of the Ship Canal crew: "To have come rushing through the night and tempest over so many snowy leagues to the rescue of a group of despairing sailors, and then, with hearts greater than danger, to have gone out again and again through the dreadful breakers and brought every man ashore, was a feat so boldly adventurous that the current accounts of it in the public journals roused, at the time, the whole lake region to intense enthusiasm, and sent thrills of sympathy and admiration through the country."

INCARCERATION VERSUS WHIPPING.

We do not exaggerate the situation when we say that the prison life of the offenders of the day is made far pleasanter and more comfortable for the average of them than that which they enjoy when they are free. This may be a humane method for the time being. Whether it effects the greatest good for the greatest number is a serious question. Society should not, of course, be vindictive in meting out justly incurred punishment, but neither should it err in the other direction, and by a too complacent attitude toward the law-breaker destroy the reformatory influence of his punishment, and to that extent encourage him to continue in his career of crime.

A good whipping administered in private would possibly be far more effective as a preventive than a period of comfortable sequestration upon the banks of the Hudson River or in any other of the first-class criminal hostelries of the country.—Harper's Weekly.

THE ART OF THE HANDWRITING EXPERT.

Theodore Waters tells in the "Home Magazine" for December how it is possible to detect imitations of handwriting, and why it is impossible for anyone successfully to forge another man's name. It seems the matter of handwriting analysis is almost a mathematical science. All this is very interesting, in the light of the recent criminal cases in which handwriting analysis has played so important a part.

REMOVING OBSTRUCTIONS FROM THE NOSE.

Very many young children have the bad habit of pushing small, hard substances, as shoe-buttons, beans, or pease, into the ears or nostrils. A simple way to remove an object from the nose is to compress the opposite side and make the child blow his nose violently. If he will not do this, induce a sneeze by tickling the nostrils with a feather, blade of grass, or some fluffy substance. If this, too, is not successful, a little pepper or snuff should be used. A hard sneeze will probably remove the obstruction, but always keep the opposite side of nose compressed. If the trouble is in the ear, it is a little more serious and the object more difficult to remove. Insects, bugs, beads or small pebbles may be forced out by gently syringing the ear with warm water, or by pouring in a few drops of oil or glycerine. But if the object be large and so tightly wedged in that it cannot be easily removed with the fingers, do not tamper with it, but take the child to a good aurist. If the object be a pea or bean, it is better not to use a syringe, as the water will cause it to swell. An old and excellent way to remove these obstructions is to dip a camel's-hair brush, or small stick which has been tapered off to almost a point, in some stout glue; attach this to the offending body and allow the glue to harden, then gently draw it out.—Marianna Wheeler, in "Harper's Bazar."

PAMPHLET REPRINTS, REPORTS, ETC., RECEIVED.

Medicine as a Business Proposition—A Lecture. Price 25 cents. C. Frank Lydston, M. D., Chicago, Ill.

Practical Hygiene. H. R. Hopkins, M. D., Buffalo, N. Y.

Trachoma. Jas. Cole Hancock, M. D., Brooklyn, N. Y.

Pelvic Pain in Women from Impacted Ureteral Calculi. Septimus Sunderland, M. D. John Bale, Sons & Danielson, Great Litchfield st., London, W.

Functional Derangements of Ocular Muscles. Edward W. Wright, M. D., Brooklyn, N. Y.

Displacement of the Pelvic Organs. Frederic Home Wiggin, M. D., New York.

Treatment of Hypertrophy of the Inferior Turbinated Bone. E. Harrison Griffin, M. D., New York.

Management of Congenital Exomphalos—Infantile. Thomas Manley, M. D., New York.

Hemorrhage and Circulatory Disturbances in Complicated Fracture. Ibid.

Dilatation of the Stomach. John H. Mussey, M. D., and J. Dutton Steele, M. D., Philadelphia, Pa.

Therapy of Feminine Hernia in the Adult. Thos. H. Manley, M. D., New York.

Contagiousness of Pulmonary Consumption. Ernest L. Shurley, M. D., Detroit, Mich.

Nephrectomy for Pyonephrosis. Chas. P. Noble, M. D., Philadelphia, Pa.

Epithelioma of the Vulva. Ibid.

Prostitution and Venereal Diseases in Their Relation to the Public. Isadore Dyer, New Orleans.

Statistics of the Loomis Sanitarium at Liberty, N. Y. J. Edward Stubbert, Liberty, N. Y.

Subsequent Histories of Patients Apparently Cured Under Administration of Antitubercule Serum as an Auxiliary to Climatic Treatment. Ibid.

X-Rays as a Diagnostic Agent in Pulmonary Disease. Ibid.

Notes on Cancer. John C. MacEvitt, M. D., Brooklyn, N. Y.

Stricture of the Esophagus and Electrolysis by a New Esophageal Electrode. Chas. D. Aaron, M. D., Detroit, Mich.

Economical Disposal of Sewage with Purification in Small Communities. Robert Fletcher, Ph. D., Dartmouth College, N. H.

Presidential Address at Meeting of the American Laryngological, Rhinological and Otological Society. S. E. Sally, M. D., Colorado Springs, Col.

Non-Malignant Gastric and Duodenal Ulcers. Thos. E. Satterthwaite, M. D., New York.

Superheated Dry Air in the Treatment of Rheumatic and Allied Affections. Ibid.

Recent Methods in Cardiac Therapeutics by Baths and Exercises. Ibid.

Imperfect or Deficient Urinary Excretion as Observed in Connection with Diseases of the Skin. L. Duncan Bulkley, M. D., New York.

THE SANITARIAN.

FEBRUARY, 1901.

NUMBER 375.

ANIMAL DISEASES AND ANIMAL FOOD.*

By D. E. SALMON, D. V. M., Chairman, Washington, D. C.

Your committee, to which has been referred the important subject of animal diseases and animal food, has given much attention to the developments of the year in this direction, but only finds it desirable to invite the attention of this Association to a very few topics.

GLANDERS.

It has come to the notice of your committee that during the last two years there have been in some localities an unusual number of cases of glanders in horses. This increase has been observed in widely separated States, and over a considerable extent of territory. As glanders is a disease easily communicated and fatal to man, these observations are of especial interest to this Association, particularly in these days when serum from horses is so largely used in the treatment of human diseases. The more prevalent is this disease, the greater should be the care exercised in the selection of horses for the production of serum. It is, therefore, more important at this day to eradicate glanders than ever before. We have not only the danger of accidental infection to those who come in actual contact with the affected horses, but we have in view the very desirable object of maintaining the reputation of our horses for healthfulness, since they have become the source of remedial agents of world-wide use.

It has been the experience of all countries that glanders increases in army horses during the progress of a war. The necessities of military operations often require the hurried collection of horses, the omission of the usual precautions against contagion, the most severe physical exertions, and the sustenance of the animals upon

*From proceedings A. P. H. A., October 23, 1900, in advance of publication by courtesy of the Secretary.

minimum rations—conditions which favor the introduction and propagation of the glanders contagion.

The short war with Spain was no exception to the rule, and the army horses became extensively infected, carrying the contagion after the conclusion of hostilities to various parts of the country. Whether this method of dissemination accounts for the entire increase in the disease, your committee has not the means of ascertaining, but it is worthy of remark in this connection that the United States Army appears to be the only one among civilized nations which does not have an organized and commissioned veterinary service to guard the health of its animals. The veterinarians at present are employed as civilians; they are distributed among the cavalry regiments with no bond of union. There is no professional head to the service to make regulations; to hold the regimental veterinarians responsible for intelligent action, and to instruct them as to their action in the case of emergencies. There need be no surprise, therefore, that when we have even a short war disease, and especially glanders, becomes epizoötic and develops beyond control.

RABIES.

There has come to the attention of your committee during the year information which demonstrates the frequency of rabies in the United States, and which indicates that the disease is becoming more common. This result is not entirely unexpected when we consider the increase in the canine population of the country and the fact that measures of control are but seldom adopted, being at best of temporary application and lacking in thoroughness.

In an outbreak of rabies at Buffalo, N. Y., the Health Department carefully investigated 95 cases of furious rabies in dogs, and 35 cases of dumb rabies. Many other cases occurred which were not investigated. Four persons were victims of this outbreak. In the District of Columbia there has also been a serious outbreak of this disease—during the year ending June 20, 1900, 45 cases in dogs, 4 in cattle, 1 in the cat, and 1 in the horse. In each of these cases the nature of the disease was demonstrated by inoculation experiments made by the Bureau of Animal Industry. That bureau has also made observations in previous years, and has demonstrated by inoculation experiments the following cases in dogs: 1893, 11; 1895, 2; 1896, 5; 1897, 3; 1898, 7; 1899, January 1 to June 30, 4. Other outbreaks have been reported to your committee from Maryland, New Jersey, Pennsylvania and Minnesota, all with positive evidence of the character of the disease.

Information of similar outbreaks in several other States has been received, but your committee has not had an opportunity to investigate and establish their character by incontrovertible evidence. While about twenty persons were bitten in the District of Columbia during the year, nearly or quite all of them took the Pasteur treatment and no deaths have occurred. From various parts of the country have been received accounts of disease and death of numerous domesticated animals of different species with the symptoms of rabies. Some of these have been investigated, notably the death of 18 cows at the Governmental Hospital for the Insane in the District of Columbia, and the diagnosis confirmed by inoculation experiments.

Fatal as is the disease in man, and your committee is of the opinion that no single case has been known to have recovered; agonizing and terrible beyond description as are the sufferings of the human patient, your committee finds its greatest cause for alarm not in the dreadful nature of the disease, nor yet in the difficulties attending its control by sanitary measures, but in the existence in the United States of numerous societies with large membership which are deliberate and active in the circulation of literature calculated to deceive the people as to the existence of this disease, and to develop obstacles and resistance to the health officers in their efforts to eradicate it. So marked has been the effect of this literature, even at the Capital of this advanced and intelligent country, with all its education and science, that the order for muzzling dogs during the outbreak could not be enforced, and all regulations for the control of the outbreak were finally abandoned.

It is most unfortunate that some members of the medical profession have joined in this crusade to discredit the results of the experimental studies of this disease—scientific studies which began with the century and are still being continued. Their sincerity and honesty are not questioned, but surely where there is so much at stake for the human race, and where it is so easy to repeat the crucial experiments upon which our science rests, these gentlemen owe it to their own reputations and, above all, they owe it to their profession to make a careful investigation before distributing broadcast to the laity their misleading and deceptive statements. One of these gentlemen advertised in a newspaper of the city of Washington, offering a reward of $100 for a case of rabies in man or animal. The chairman of your committee offered to produce a case at any time if the diagnosis were left to a com-

mittee to be appointed by the Medical Society of the District of Columbia, the money, in case it was earned, to go to a charitable society. This proposition has never been accepted. Another gentleman has publicly stated that he has sought for a case of rabies for sixteen years without being able to find one, and yet in his own city, at the Veterinary Department of the University of Pennsylvania, there have been numerous cases nearly every year, characteristic and well authenticated, which he could have seen and investigated by merely asking permission. It has been frequently asserted that there has not been a single well-established case of either rabies or hydrophobia in the great city of New York for the past thirty years, and yet the records of the American Veterinary College show an average of seven cases a year for twenty-five years, and the bacteriologist of the Department of Health of that city has, during the last three years, confirmed the diagnosis of rabies in forty cases in domestic animals and in three cases of mankind.

This is a country governed by the people, and health officers cannot go far beyond the sentiment of their constituency without meeting with the most serious checks and reverses. If the people know the facts there should be no difficulty in stamping out such a dangerous and dreaded contagion; but in a community prejudiced by misleading statements, inflamed by assurances that there is no danger and that the measures adopted are relics of barbarism forced upon the citizens by ignorant and unscrupulous health officers—in such a community it is difficult or impossible for the sanitarian to afford relief.

Your committee is firm in the belief that some means should be devised of educating the public upon this subject. The agencies of misinformation are numerous and far reaching; not only are there special journals maintained by the societies referred to, but open letters have been sent to the editors of all newspapers asking them to suppress accounts of this disease, and furnishing them literature by which to convince their readers of its non-existence. It is not too much to expect that the members of this Association will in their several spheres be active in the dissemination of truth and in combating the plausible and deceptive fallacies to which reference has been made.

TUBERCULOSIS.

Your committee finds in the tuberculosis of animals a disease of transcendent interest, not only because of its effect in lessening

the food supply, but because of its deleterious influence upon food products and the possibility of the contagion being transmitted to man and causing fatal results. Seven years ago in discussing this subject your committee advised conservative and moderate action, with a view of gaining time for educational work, and allowing dairymen an opportunity of gradually reducing the disease in order to avoid burdensome losses.

The developments of the intervening time have not been as satisfactory as we had reason to expect. In some States the authorities were too radical and harsh in their proceedings, and the result has been practical stoppage and failure of their efforts. In other States there has been a ceaseless agitation against and denunciation of the tuberculin test, the only effectual means of discovering the disease in living animals. Every argument has been used to make the efforts of those who were trying to eradicate the disease appear to be unreasonable, unnecessary and an uncalled-for persecution of the cattle owners. Not only have these agitators insisted upon the right to furnish the public with dairy products from tuberculous animals, but they have cultivated the sentiment that tuberculosis is not a bad thing to have in a herd. The situation as it exists to-day is one of the most vivid examples that we could have of the difficulty of protecting human health and human life where we have on the one side the consideration of commercial gain and personal aggrandizement, and on the other the claims of humanity.

In a few States good work is being done, and the disease is being diminished. In most States there is either no effort being made to repress the disease, or such effort is too feeble to have any appreciable effect beyond the irritation of the cattle owners. In the meantime it has become apparent that swine are affected to an extent which is calculated to bring disquiet to those who know that with these animals the disease is usually acute and often generalized. As swine are generally fed the skim milk and buttermilk, it is to be expected that tuberculosis will increase with them in the same proportion that it does with cattle. The changes in dairy methods which have led to the establishment of creameries have probably contributed to the dissemination of tuberculosis among swine. If, for example, there is only one tuberculous herd of cows in a community the infectious milk of that herd would be mixed at the creamery with the milk of all the other patrons of the establishment, and would thus infect the whole. The skim milk and buttermilk afterward divided and returned to the several

farms might infect every herd of swine in that community. This danger might be counteracted by sterilizing the waste products before they are allowed to leave the creamery, but this precaution is usually neglected.

Your committee has carefully considered the arguments of those who oppose action for the control of tuberculosis, and asks your indulgence while some brief references are made to them. The one assertion which includes all others is that bovine tuberculosis is not communicable to man and hence the sanitarian is not warranted in causing animals so affected to be removed from dairy herds. If this contention were demonstrated, would the conclusion necessarily follow? Evidently not. Consider, if you please, a herd like that belonging to Her Majesty the Queen, and which furnished milk for use at Windsor—and there are many such herds, and not all of them in Great Britain. This herd was under veterinary supervision and was believed to be healthy, yet when tested with tuberculin ninety per cent. were found tuberculous, and upon post-mortem examination some of them revealed most extensive lesions. Is it conceivable that a cow will give normal and wholesome milk when it has a whole lung transformed into a tuberculous mass, with tubercles disseminated through the liver and other organs, and with, perhaps, tuberculosis of the milk ducts as well? Would any one knowing the animal's condition be willing to drink the milk from such a cow, or give it as food to his children, even if satisfied that the specific disease tuberculosis could not be transmitted in that manner?

It appears important that the milk supply should come from healthy cows, and that any animal having extensive inflammation of any kind, in any organ, and particularly any disease accompanied by extensive suppuration or mixed infection, should be condemned as a milk producer. It is claimed, however, that many cows which react to tuberculin and would be destroyed have comparatively small lesions, and such as would not affect the quality of the milk. This may be granted as an undoubted fact; but, on the other hand, it is equally certain that almost as great a number with serious and extensive disease are discovered with tuberculin and could not be discovered in any other manner; it is also certain that a majority of those with minor lesions will in time become badly affected, and that no one can tell the day or the hour when their milk assumes a dangerous character.

Having said this of the disease without reference to its contagious character, your attention is invited to the principal argu-

ments of those who insist that bovine tuberculosis is not communicable to man. It is scarcely necessary to remind this Association that bovine tuberculosis is caused by the bacillus tuberculosis; that this bacillus is frequently found in the milk of tuberculous cows; that the milk of such cows has been inoculated upon guinea pigs and rabbits and produced tuberculosis; that the milk of such cows has been fed to guinea pigs, rabbits, swine and calves and produced tuberculosis. So much for the well-known experimental evidence.

The conclusion which would seem to follow from this evidence that the milk of tuberculous cows is dangerous to the human consumer has been met, and the attempt has been made to counteract it, by certain experimental evidence and certain conclusions which are worthy of a critical examination. Firstly, it has been asserted that the tubercle bacillus is only found in the milk of cows with tuberculous udders, or in that from cows in a very advanced stage of tuberculosis, and that in either case the diseased animals may be readily discovered by physical examination. This assertion has been made by men who stand high as authorities, but the evidence upon which it is based is far from satisfactory.

A short time ago the Bureau of Animal Industry tested a herd of 102 cows belonging to a Government institution in the District of Columbia. Seventy-nine of these animals reacted, and as more than fifty of them were in good condition, without physical signs of tuberculosis in the udder or elsewhere, it was considered a favorable opportunity to test the infectiousness of the milk. The test to which reference will now be made was conducted by feeding the milk to guinea pigs. The final results have not yet been reached, but a large proportion of these cows, over twenty-five per cent., gave milk which killed guinea pigs with tuberculosis in a very few weeks. Dr. Ravenel has been associated with similar experimentation in Pennsylvania with an even larger number of cows, fourteen per cent. of which gave infectious milk. Considering the number of cows experimented with, and the large percentage which produced infectious milk, the results cannot be passed by as exceptional, and, consequently, we can no longer accept the statement that there must be plain disease of the udder or evident emaciation before the milk becomes infectious.

In the very instructive observations and experiments made by Dr. Theobald Smith of this Association, it has been shown that there are certain morphological peculiarities and cultural characteristics which prove that the tubercle bacillus from human sputum

and that from bovine tuberculosis differ considerably, and when inoculated the human bacillus is less virulent for cattle and for some other animals. These results have been confirmed and must be accepted as a valuable contribution to our knowledge of this important subject.

These facts have been taken up by those who oppose the work for the eradication of bovine tuberculosis, and conclusions drawn from them far beyond what the investigators have ever claimed. It has been defiantly asserted, for example, that because the human sputum bacillus has but slight virulence for cattle and can with difficulty only, if at all, be made to produce extensive lesions with these animals, that it necessarily follows that the bovine bacillus is harmless to mankind. It must be evident to any pathologist that this reasoning is fallacious, but nevertheless it has had an enormous influence in shaping public opinion and in deciding legislative action in some parts of the country.

It may possibly be found that it is not safe to accept the sputum bacillus as an accurate measure of the virulence of human tuberculosis, and when the bacillus from early tubercular lesions in man is compared with the sputum bacillus there may be found important differences. But whether this turns out to be the case or not, the fact that the sputum bacillus does not readily multiply in cattle is no evidence that the bovine bacillus will not readily multiply in the human body. It is not an uncommon phenomenon that a microbe loses virulence when passed through certain species of animals and gains virulence when passed through others. Thus Pasteur found that the virus of rabies was attenuated in the bodies of monkeys; but no one would claim because rabies virus from monkeys is not virulent for dogs that, conversely, rabies cirus from dogs is not virulent for monkeys.

Again we have in cow-pox and small-pox either two closely allied diseases, or, as many claim, two varieties of the same disease. Small-pox is very virulent in the human subject and easily communicated from man to man, but strangely enough it is only inoculated with some difficulty to cattle, and is then localized and produces only a mild form of disease, with a tendency to attenuation if passed from animal to animal. How far from the truth would we be if we concluded from this fact that because small-pox virus does not retain its virulence in cattle, cow-pox would not be communicable to mankind. That cow-pox is easily transmitted to man, and that it is reproduced with all its characteristics and activity, is shown by every successful vaccination.

A study of the facts of comparative pathology, therefore, does not warrant the conclusion that because the sputum bacillus is not virulent for cattle, the bovine bacillus is not virulent for man. It would be more in accordance with analogy to reason that the tubercle bacillus develops a higher virulence in cattle than in man, and that it is not only more virulent for cattle, but for man also. It has been already shown that the bovine bacillus is not only more virulent for cattle than is the sputum bacillus, but it is more virulent for guinea pigs, rabbits, swine, dogs, cats, sheep and goats. Now there is a general rule in comparative pathology that a contagion which is virulent for several widely separated or unrelated species of animals is virulent also for mankind. The contagion of anthrax, rabies, epizoötic, aphtha, glanders, malignant œdema, tetanus and cow-pox are striking examples. If this rule were applied we should be forced to conclude that the bovine bacillus is dangerous to man as well as to these various species of animals.

Come to facts of more direct application, and we have the evidence of accidental inoculations of man with the bovine bacillus which may be contrasted with the anatomical tubercle caused by similar inoculations with the human bacillus. A comparison of the recorded cases of such inoculations which we have been able to find in a cursory search of the literature indicates that the effects in man produced by the bovine bacillus have been at least as serious as those produced by the human bacillus. A member of this committee, Dr. Ravenel, has put on record three cases of inoculation of man with the bovine bacillus. Pfeiffer relates a fatal case in which the contagion was contracted in this way: Veterinarian Moses, who came of a healthy family, wounded himself in the left thumb while making an autopsy of a tuberculous cow. The wound healed without suppuration, although the knife probably penetrated the joint. After six months, however, there developed on the scar a cutaneous tubercle with disease of the joint. In about a year from the inoculation symptoms of tuberculosis of the lungs developed, ending in death six months later.

Your committee does not consider it desirable on this occasion to enter into further details in the discussion of this subject. It has presented the matter as comprehensively as is possible in a brief report, and it holds that the recent investigations not only do not weaken the older evidence as to the danger of bovine tuberculosis to human health, but that, on the contrary, they strengthen that evidence and make its application no less certain. All of which is respectfully submitted.

SANATORIA FOR CONSUMPTIVES.

Paper read at the meeting of the Fall River Medical Society, Dec. 12, 1900.

By GEO. L. RICHARDS, M. D., of Boston.

Day after day, month after month, year after year, the problem of tuberculosis comes before each one of us for solution. Its insidious beginning, its slow progress, and its usually fatal termination, forms a familiar picture. Specific after specific has been brought forward as a cure, yet all have been weighed in the balance and found wanting, and the death rate remains as before. Cod liver oils, and other fats and foods; gas injections, first rectal, then pleural, and serums, come and go; and still one-seventh of the human race die of tuberculosis.

Up to the present time, good air, sunshine, a good diet, with a careful looking after the general bodily conditions, have done as much for these cases as anything. Much has been accomplished by the removal to a suitable climate; and many cases which have been diagnosed sufficiently early have improved, and even got well, in Colorado, Mexico, California, and other high and dry altitudes in this and other countries.

With a more thorough appreciation by the public of the contagiousness of the disease, and the knowledge of what has been done in certain climates, and especially in the European sanatoria, both the profession and the public are beginning to feel that every State has a duty to perform towards its people in the lessening, so far as possible, of the death rate from this malady. It is becoming recognized that the annual loss by death from this disease is a direct money loss to the State, and that it is one of the proper functions of the State to do something toward diminishing its ravages.

For years, a high, dry climate and an out-of-door life have been recognized as essential in the treatment of tuberculosis, and careful investigation has proved that somewhere in early every State such places, comparatively readily accessible, can be found. The private sanatoriums at Liberty and Saranac Lake, New York, and Sharon, in our own State, have had as good results as are obtainable in Colorado. Even at the sea level, good results are obtain-

able, since fresh out-of-door air is more necessary than altitude or dryness, and this is obtainable anywhere.

With these facts before them, and with the feeling that the annual death rate from this disease in Massachusetts might be lessened, a number of physicians and laymen went before the Massachusetts Legislature and obtained an appropriation for a State hospital for the treatment of incipient tuberculosis—the first hospital of the kind to be erected by an American commonwealth.

After correspondence with physicians all over the State, a site was chosen in the town of Rutland, a small country town a few miles north of Worcester, in the exact geographical centre of the State, and on the Central Massachusetts Railroad. It is reached from Fall River via South Sudbury, on the line to South Framingham and Lowell. The hospital was formally opened in October, 1898. The tract of land in which the hospital lies consists of 200 acres on the south side of a wooded hill, extending to a lake. The elevation is 1,160 feet, and the water supply and sewerage are entirely satisfactory. One hundred and eighty-one thousand dollars were expended on the land and building, and $60,000 is now allowed for its annual maintenance. The building is on the pavilion plan, with a number of wards, alternately long and short, leading out from a central corridor and two-story administration building, like the fingers of a hand, and with distance enough between them to provide for an ample supply of air and sunshine. There is a sun room at the end of each ward, and beyond this a broad veranda, from which is obtained a beautiful view of mountain and valley, the whole region for miles around being picturesque in the extreme. There are a few private rooms in each ward for the cases which are the sickest, but mostly open wards are used. At the other end of the wards are the sanitary arrangements, apart from the wards, and reached by a covered passageway; these are ample and satisfactory. Each long ward has 22 beds, and five rooms with one or two beds. The windows are always open night and day, and, so far as possible, an out-of-door atmosphere is maintained in the wards. In winter, the heat is turned on night and morning for dressing and undressing; abundance of clothing, both for the body and on the beds, is provided, arther than artificial heat. Much of the daytime is passed out of doors, both in summer and winter. Small temporary wooden shelters have been erected for winter use, opening toward the south, and in these the patients take daily and hourly air baths. Various camps are made from boughs brought from the neighboring woods, and in

summer hammocks are used a great deal. The hardier patients are allowed to cut wood and do light work about the place.

The hospital is designed for incipient cases only, by which is meant those showing only the earliest signs of the disease, yet unmistakably tuberculous. Some advanced cases were taken at first, owing to the prejudice which was found to exist against the massing together of a large number of tuberculous persons; this prejudice has now passed away, and there are more applications for admission than there are accommodations. Many of the more advanced cases were very much helped. I, myself, saw one of the most unfavorable ones, who had so far improved that, at the end of eleven months, he took up his permanent abode in the town and opened a private sanatorium where more advanced cases are received and taken care of, after the methods in use at the State Hospital. Several other discharged patients have opened boarding houses, or sanitaria, where patients who are unable to enter the State Hospital are received and taken care of, so far as their medical attendance is concerned, by the local physicians; of these I shall speak later on.

There is nothing new or novel in the methods of treatment employed. A simple, abundant diet of nourishing food, frequently given, three full meals and two lunches; and, on good days, the spending of nearly all the time in the open air, constitute, in the main, the treatment. Some cases receive no medicine whatever, others a varying amount, depending entirely upon what the indications seem to warrant. No routine medicinal treatment is in vogue in either the regular or the homeopathic service. Serums have not been employed, nor any specific or medicinal treatment in common use. Each patient has a note-book in which he enters amount of sleep, condition of bowels, temperature, etc. The temperature is taken twice a day, and no exercise allowed when it is over 101. Sanitary sputum cups are used indoors and burned daily; Japanese napkins in oiled-silk, or rubber pouches, for outdoor use, and Japanese paper napkins at the table. Pulmonary gymnastics are taught and regularly practiced, and sponge and plunge baths are given at regular intervals. It has been claimed that the putting together of so many people with the same disease would have a depressing effect upon their mental condition. Practically, however, this has not been found to be the case; on the contrary, "There is an atmosphere of good humor and cheerfulness about the patients most of the time, and expressions of dissatisfaction are rare."

While there are two divisions of the medical staff—the homeopathic, under the charge of Dr. Herbert C. Clapp, and the regular, under the care of Dr. Vincent Y. Bowditch—I could not ascertain that the methods of treatment or the results were essentially different. There are two resident house officers, one for each division, and a medical superintendent who, however, is more the executive officer of the hospital than he is responsible for the medical treatment of patients. Trained nurses are employed, under the charge of an efficient matron, and the whole impression that one receives on visiting the hospital is a pleasant one.

In the last annual report, Dr. Bowditch admitted from October 10, 1898, to October 1, 1899, 214 patients. Of these, 126 were discharged during the year. Eleven of this number remained less than two weeks, and are not considered in the results. Of the remainder, 35 were discharged as "arrested cases"; 37, "much improved"; 17, "improved"; 24, "not improved." One was a case of bronchitis only, and one died in the hospital from the result of a blow on the chest, which was followed by hemorrhage. Of the 35 cases classed as "arrested," 20 had had bacilli in their sputa at entrance; two had had no sputa, but had reacted positively to the tuberculin test; and nine had no tubercle bacilli, but had undoubted symptoms in physical signs of pulmonary disease. The remaining four had very suspicious symptoms without definite signs in the chest.

The term "arrested" is described by Dr. Bowditch as applying to those cases in which all active symptoms like cough, expectoration and fever have disappeared, and where the general symptoms would seem to indicate a complete restoration to health, even when there may be abnormal sounds remaining in the chest.

The average stay in the hospital has been four months. The average gain in weight of the 35 arrested cases was 15 3-5 pounds, the largest gain in weight being 45 pounds, and this patient had remained in the hospital six months, and had previously given a history of cough for over six months, great loss of flesh and strength, with signs of disease in the tips of both lungs. All symptoms disappeared two months before his discharge, and he has remained in the same condition ever since. Dr. Bowditch states that many of the cases that were discharged as "much improved," ought to have remained longer, but were obliged to leave Rutland from lack of means.

Dr. Clapp reports the admission of 166 patients, of whom 89 were discharged. Eleven of these were in the hospital less than

one month, leaving 78 who were there for a period varying from one month to one year. Of these, 39 were incipient cases, 25 of whom were apparently cured, 12 were improved, one became stationary, and one was worse. The report shows that there were 9 far-advanced cases, of whom one improved, one became stationary, and 7 worse. It is believed that the majority of the apparently cured cases will stand as cured; while it is conceded by both visiting physicians that some of them will undoubtedly relapse.

Here, as elsewhere, the statistics of the disease must be considered as unreliable until several years have elapsed, and it has been possible to follow out the subsequent histories of the discharged patients. On the other hand, the result, or the good that such an institution can do, is not to be weighed on the simple question of statistics; it will have great value as a disseminator of information as to the proper management of consumption in the home. The discharged patients will carry out in their own homes the principles which have been drilled into them while at the hospital, and will teach those with whom they come in contact the value of fresh air and an out-of-door life, and the need of more air and sunshine in the individual home. Being taught how to carefully provide for the sputum, they will cease to be an element of danger in the community to which they return, and thus their hospital stay will have a value far above the mere question as to whether they were discharged improved or apparently cured.

At present four dollars per week is charged every patient, but the actual cost to the State for the past year was $8.40 per week for each patient.

Patients are admitted after examination by Dr. Bowditch or Dr. Clapp, who have charge of their medical treatment, and who decide the duration of their stay in the hospital. No private patients are received, and private rooms are allowed only for physical reasons. No extra charges are made, and no fees or tips allowed. Patients desiring admission to the hospital in Dr. Bowditch's service have to apply to him at the Boston office of the hospital, 181 Tremont Street, on Wednesdays, or at the hospital in Rutland on Fridays. Persons desiring to enter Dr. Clapp's service apply at the same places, on Saturdays at the Boston office, at the hospital in Rutland on Mondays. The Boston office is open from 10 a. m. to 12 o'clock noon only, and patients have to apply in person. All patients who do not improve after a stay in the hospital sufficiently long to test the effect of treatment are advised not to remain.

Persons who are examined and receive cards of admission have to present themselves at the hospital within two weeks, or in case of failure to do this, have to be re-examined, and if the number of applicants is greater than the accommodations, as is usually the case at present, the person has to be personally re-examined if no vacancy occurs within two weeks after the card of admission is given. The object of this is probably to prevent the admittance of cases really doing badly, but it seems at first sight as though it might work hardship and discomfort in a good many cases. I have recently had a patient who was examined for admittance, and who did not care to go at the time of examination; three or four weeks later he decided to go, and on writing the hospital was informed that he could not be admitted without re-examination in Boston. To the present time Fall River has had but one patient in the hospital.

I would urge any member of this society who has cases suitable for admission to make an effort to have them enter the hospital, feeling sure that he will be satisfied with the results.

The name has been changed from the Massachusetts Hospital for Consumptives and Tubercular Patients, to the Massachusetts State Sanatorium, thus removing the dread words consumptive and tubercular from the name of the hospital.

There is no room at the State Hospital for all our patients, and some of those we would like to send there will not be taken. What can be done for them?

Since the establishment and successful operation of the State and other sanatoriums, the impression has been gaining ground among the profession that every large town has, somewhere within its limits or immediate vicinity, some place where a sanatorium for the care of consumptive patients could be put up and maintained at small cost. It could be under the care of a staff of physicians interested in this subject and visiting the patients as needed, while the daily care of the patients could be carried on by a small staff of trained nurses. As the treatment is mostly hygiene—good food, good air, sunshine and the teaching of right ways of living—such an institution can be put up at small cost if built anew, or, unlike a general hospital, it can be easily elaborated from a house already built, the only requirement being that a sufficient amount of room be furnished each patient and that the sanitation be good.

Such an institution ought to be maintained by the city of Fall River, whose annual death rate from tuberculosis is very large.

It ought to be open to patients who can pay and to those who cannot; those who can pay paying some of the cost of maintenance. It is my opinion that many a case of this disease could be cured right here in our own city, even though our climate is far from ideal, if the cases could be taken and cared for early enough. Many cases well along in the disease would be able, after a few weeks or months of this kind of treatment, to resume work and care for their families, since they would have been taught in the institution better ways of living and better hygiene. Such a patient, when he returns to his home, is less liable to be a menace to the community, whereas in our present method of caring for these patients in their homes, frequently under bad sanitary arrangements, and with a fear on their part that they will catch cold if they have an abundance of air and sunshine in their homes, they are a menace to their friends and to the community.

It is manifestly impossible for the State Hospital to care for all the cases of this kind which need the treatment it can give; it must be considered more in the way of an object lesson and as a pattern in its methods for a group of smaller hospitals to be built and maintained by the municipalities of the State. Again, the State Hospital has necessarily a good deal of red tape attached to it, and if we send what we, as physicians, regard as a suitable case, it is by no means certain that it will not be returned to us as either too far advanced for the State Hospital, or else because there is no room, and our patient, having had a tedious journey to Boston and return at some expense, is told to come again at another day. Again, the State demands four dollars a week; the charge is not high, but over against this it must be taken into account that the person affected may be the wage-earner of the family, and four dollars a week an absolute impossibility for him to provide so soon as he has to stop work. Supposing then, nothing is done for him; what happens? The individual works as long as he can, and then in default of means must needs apply to the city physician, who tends him it may be a while at his home, and finally sends him to the city hospital, where, in an ordinary hospital ward, entirely unsuitable for this class of cases, he slowly awaits the inevitable end, fed with cough syrups and mixtures to ease his sufferings and make his cough less objectionable to the rest of the patients, but where suitable care is entirely out of the question. The city hospital is the only place where, at present, such patients will be received, since no general hospital, such as

the Union, will take them except for temporary relief, and then under protest.

If, as I believe, the lives of many patients could be saved by methods such as I have indicated, then it would be a real economy for the city to become interested in this matter, not only for the saving of the incipient sick, but for the protection of the immediate families of those ill with this disease, and as a matter of economy in dollars and cents. We ought not to regard the consumptive as an outcast, but should endeavor to save him. An early diagnosis and proper ways of living will greatly aid in doing this, and nothing would do more for it than a public institution such as I have suggested. We have spent enormous sums in the endeavor to stamp out small-pox from our midst, and every dollar of that expense was justified; but this great scourge of consumption, always with us, has a death rate compared with which that of small-pox is as nothing. Yet we sit idly by year after year, and, as a municipality, do nothing for its prevention or cure.

I would urge upon this society that it take some active part in this matter, and endeavor to bring about the erection of some such institution as I have indicated.

HEALTH OF THE CITY OF NEW YORK, AND THE WATER SUPPLY.

Annual Report of Dr. Henry Dwight Chapin, Chairman of the Committee on Hygiene of the Medical Society of the County of New York, 1900.

There is happily no special feature to record in reference to the public health of New York City during the past year. The deaths from diarrhœal diseases, gastro-enteritis and enteritis may be considered as a fair index, in their relation to the general death rate, of the general health and sanitary condition of the community. During the four summer months, the following were the number of deaths reported from these causes in the Boroughs of Manhattan and the Bronx: June, 259; July, 1,081; August, 754; September, 598. Total, 2,692.

This does not represent an unusual number, in comparison with previous years, in spite of the great and continuous heat of the past summer. The high temperature of 1900 caused 197 deaths from sunstroke; but in 1896, there were 765; in 1898, 388; while

It ought to be open to patients who can pay and to those who cannot; those who can pay paying some of the cost of maintenance. It is my opinion that many a case of this disease could be cured right here in our own city, even though our climate is far from ideal, if the cases could be taken and cared for early enough. Many cases well along in the disease would be able, after a few weeks or months of this kind of treatment, to resume work and care for their families, since they would have been taught in the institution better ways of living and better hygiene. Such a patient, when he returns to his home, is less liable to be a menace to the community, whereas in our present method of caring for these patients in their homes, frequently under bad sanitary arrangements, and with a fear on their part that they will catch cold if they have an abundance of air and sunshine in their homes, they are a menace to their friends and to the community.

It is manifestly impossible for the State Hospital to care for all the cases of this kind which need the treatment it can give; it must be considered more in the way of an object lesson and as a pattern in its methods for a group of smaller hospitals to be built and maintained by the municipalities of the State. Again, the State Hospital has necessarily a good deal of red tape attached to it, and if we send what we, as physicians, regard as a suitable case, it is by no means certain that it will not be returned to us as either too far advanced for the State Hospital, or else because there is no room, and our patient, having had a tedious journey to Boston and return at some expense, is told to come again at another day. Again, the State demands four dollars a week; the charge is not high, but over against this it must be taken into account that the person affected may be the wage-earner of the family, and four dollars a week an absolute impossibility for him to provide so soon as he has to stop work. Supposing then, nothing is done for him; what happens? The individual works as long as he can, and then in default of means must needs apply to the city physician, who tends him it may be a while at his home, and finally sends him to the city hospital, where, in an ordinary hospital ward, entirely unsuitable for this class of cases, he slowly awaits the inevitable end, fed with cough syrups and mixtures to ease his sufferings and make his cough less objectionable to the rest of the patients, but where suitable care is entirely out of the question. The city hospital is the only place where, at present, such patients will be received, since no general hospital, such as

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If, as I believe, the lives of many patients could be saved by methods such as I have indicated, then it would be a real economy for the city to become interested in this matter, not only for the saving of the incipient sick, but for the protection of the immediate families of those ill with this disease, and as a matter of economy in dollars and cents. We ought not to regard the consumptive as an outcast, but should endeavor to save him. An early diagnosis and proper ways of living will greatly aid in doing this, and nothing would do more for it than a public institution such as I have suggested. We have spent enormous sums in the endeavor to stamp out small-pox from our midst, and every dollar of that expense was justified; but this great scourge of consumption, always with us, has a death rate compared with which that of small-pox is as nothing. Yet we sit idly by year after year, and, as a municipality, do nothing for its prevention or cure.

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in 1899, 45 only died from sunstroke. The general death rate during 1899 was 19.8 per thousand.

It may be of interest in this connection to glance at the death rates of six of the large cities during the past five years:

	1895.	1896.	1897.	1898.	1899.
London.....	19.8	18.6	18.2	18.7	19.8
Paris.....	21.3	19.0	18.6	19.7	20.2
Berlin.....	19.4	17.9	17.7	17.3	18.7
Vienna.....	23.1	22.3	20.9	20.1	20.6
St. Petersburg..	28.8	30.9	29.0	25.8	25.2
New York.....	23.2	21.8	20.0	20.5	19.8

The death rates for New York given here are for the Boroughs of Manhattan and the Bronx, and are calculated from the results of the United States Census of 1900. It is seen by this table that there has been a tendency to a lower death rate during the past few years. This may be accounted for by a lessening of the virulency of influenza, by better paving of streets, and a more careful oversight of water and milk supply. Much can still be done by physicians and sanitarians and municipal governments in these relations.

During the past year a committee of this society has been studying the milk furnished to New York, and considering what practical measures can be taken to improve the general supply.

The relation between the general health of a city and its water supply is close and important. Not only the quality, but the available quantity, are factors in the problem of a proper water supply. The fact that the supply to Greater New York is not keeping pace with the growth in population, and that under present conditions this supply will soon become inadequate, should be of grave concern to sanitarians, and is a proper subject of consideration by this society. The exhaustive study of this question made by the Merchants' Association of New York furnishes the data that are here presented. This Association deserves the thanks of all good citizens for its laborious and costly work. The Boroughs of Manhattan and the Bronx are at present supplied from the Croton, Bronx and Byram watersheds. All of the supply of Manhattan is furnished by the city, and also all of the Bronx, except about 1,000,000 gallons daily, which is furnished by a private company. The Borough of Brooklyn is supplied from ponds and driven wells on Long Island, excluding Suffolk County, whose waters a special act forbids that borough to use as a source of

supply. All but about seven per cent. of Brooklyn's supply is furnished by the city. Queens is supplied by wells, about thirty per cent. owned by the city and seventy per cent. by private corporations. Richmond is supplied by wells on Staten Island, and has practically no municipal supply. Forty-five per cent. of the city's supply is pumped, and fifty-five per cent. is delivered by gravity; that is, from reservoirs at a sufficient elevation to deliver under pressure.

The average daily consumption of all the boroughs in the city of New York was, in 1899, 1,778,000 gallons, an estimated average daily consumption per capita of 103 gallons. The greatest safe permanent yield of the Croton watershed, upon the completion of the Cornell Dam, now building, is estimated at from 275,000,000 to 280,000,000 gallons per day. The additional yield from the Bronx and Byram watershed cannot be safely estimated at more than 15,000,000 to 17,000,000 gallons per day, making about 290,000,000 gallons per day, directly available for the Boroughs of Manhattan and the Bronx, although these amounts have been exceeded in some years.

In Brooklyn and Queens the city's consumption is already about equal to the average yield of the sources of supply—116,000,000 gallons per day; the present supply will be increased and improved by building a 48-inch conduit from Millburn to Spring Creek to utilize the water now available, for which bonds will probably soon be authorized. This, together with other improvements, will tide these boroughs over until a new municipal supply can be made available. In the Borough of Richmond, the daily supply of about 5,000,000 gallons can be somewhat increased, but the conformation of Station Island is such that any large increase of population would compel that borough to go outside its limits for any considerable additional supply. The investigation by the Engineering Committee of the Merchants' Association shows that in Brooklyn, Queens and Richmond the present consumption nearly equals the present supply; that in Manhattan and the Bronx the consumption in 1903 will nearly equal the supply at that time available under present methods.

It is, therefore, necessary for the citizens of New York to take immediate steps to prevent such a scarcity of water as was experienced before the new aqueduct was completed. The year fixed above, 1903, as the date when the consumption will equal the supply, may be postponed if some of the waste can be lessened. This measure of precaution must be taken in order to save the

boroughs from a water famine until a new and larger source of water supply can be obtained. The lessening of waste is, however, not merely a temporary expedient, but it will be a means of economy and security for the future. It is estimated by the engineers employed by the Merchants' Association that the total daily waste is from 120,000,000 to 150,000,000 gallons, part of which is in houses, but the larger part of which is underground. A complete cure for the latter can be found by putting all water mains in subways, where they will be accessible for the detection of repair of leaks. A well-administered meter service has been found efficacious in other cities in discovering leaks in the ground, as well as inside of buildings, and has led to the repair of both mains and the plumbing in houses, resulting in a marked diminution in the daily waste. The engineers estimate that a saving of ten per cent. can be effected by the prevention of waste, and the present supply thus made to last until the year 1910.

We are thus brought to the conclusion that an additional supply for all the boroughs of the city is imperative, and that measures should be taken to furnish the additional supply at the earliest practical moment. From six to seven and one-half years will be necessary from the inception of the work to the delivery of additional water, and immediate steps should be taken to furnish an adequate supply of water, to be available, at the latest, in 1910.

There are four great sources of supply which the engineers of the Merchants' Association have investigated:

(1) On the east side of the Hudson River, the Housatonic and Ten-Mile River watershed; (2) on the west side, the Wallkill River watershed; (3) the watershed of the Catskill, viz.: the Esopus, Catskill and Schoharie creeks; (4) the Hudson River itself.

The first two named, the Ten-Mile and Housatonic Rivers, and the Wallkill River, are interstate rivers, and have been eliminated from consideration by reason of certain legal difficulties. The Esopus and Catskill creeks, the sources from which the Ramapo Company proposes to supply the city under its contract, will yield about 260,000,000 gallons daily, and the entire Catskill watershed, which includes Schoharie Creek, will yield about 460,000,000 gallons per day. This is probably the limit of the Catskill system. All the additional water that the city of New York is likely to need for many years to come, until its population shall increase to 18,000,000, can be obtained from the Hudson River above Poughkeepsie.

It is proposed to build pumping stations and filter beds on the east side of the river, an aqueduct from Poughkeepsie to the northern limits of the city, and a reservoir near the northern limits. The plant thus constructed would be capable of supplying 250,000,000 gallons daily, although it is not proposed to build a plant capable of delivering at first more than 100,000,000 gallons daily. The 250,000,000 gallons a day, combined with the present supply, will meet the needs of the city for fifteen or twenty years to come. Thereafter increased pumping facilities at the same point, with additional aqueducts, will furnish an additional supply in any amount up to 1,500,000,000 gallons daily.

It is proposed to filter this water, the experience of other cities having shown that filtration is a perfect method of purifying water, being, indeed, only a scientific reproduction of a process of nature. That filtration is effective in removing impurities and germs of disease is amply proved by the experience of Albany, Poughkeepsie, London (England), Hamburg (Germany), and other cities. It has already been recommended by the Health Board of the city for the Croton water. The close relation between the quality of water used for domestic supply and the sick and death rates from zymotic diseases, notably typhoid and diarrhœal, has received abundant recognition.

Highly polluted water can by artificial filtration, which is but an imitation of nature's process of converting surface water into spring water, be rendered free from dangerous poisons and organisms.

The reduction of typhoid fever and diarrhœal diseases with the introduction of filtered water has occurred in a large number of cities in Europe and America. It is strongly advised that any arrangements for increasing New York City's water supply be under municipal management and control, and not by contract with any private company.

The cost to the consumer is almost always less under public than under private ownership. In 1800 there were sixteen (16) plants in operation in the United States, of which fifteen (15) were private and one (1) public. Since that time fourteen (14) of the fifteen (15) have become public. The average cost per family throughout the United States is, for public, $21.55; for private, $30.82; that is, privately supplied water costs about forty per cent. more than that supplied by the municipalities.

REDUCED MORTALITY OF CHILDREN BY THE USE OF ANTI-TOXIN.*

By L. EMMETT HOLT, M. D., of New York.

Great pains have been taken to secure accuracy in these statistics, and in many instances the data have been obtained directly from the health department. A glance at these figures shows that the number of deaths from diphtheria (including membranous croup) have diminished greatly in the cities and countries where anti-toxin has been used, and as a rule just in proportion to the degree to which it has been used. In the city of Berlin the average deaths annually from diphtheria and croup for seven years preceding the use of anti-toxin was 1,354; the average for four years since that time is 659; a reduction of 51 per cent., representing saving of 675 lives a year. Very nearly this same reduction holds throughout Germany. Of 266 towns of over 15,000 population, the average yearly deaths for seven years preceding anti-toxin was 12,050, the average for four years since then, 6,050, a saving thus in Germany alone of 6,000 lives a year, and a reduction in the mortality of 50 per cent.

Probably nowhere in Europe has the serum been so generally used as in Paris. For the seven years before its introduction the average number of deaths from diphtheria and croup each year was 1,527; for the five years since then the average is 384, a saving in this one city of an average of 1,179 lives each year, and a reduction in the mortality of 78 per cent.

In London, on the contrary, where the use of anti-toxin was at first vigorously opposed, where it has never been pushed, and very slowly taken up by the profession, the figures show an increase in the diphtheria mortality. For the seven years preceding the anti-toxin period the average number of deaths was 2,130; for five years since its introduction, 2,251; an increase thus of 119 deaths a year.

To summarize briefly; The percentage mortality of diphtheria and croup has been reduced by anti-toxin by more than one-half both in hospitals and private practice. The proportion of laryngeal cases requiring operation has been reduced one-half. Intubation which formerly saved 30 per cent. now saves 70 per cent. Trache-

*Abstract of paper on Diseases of Children, read at the meeting of the Medical Society of Hartford, Conn., December 17, 1900.

otomy which formerly saved 40 per cent. now saves 67 per cent. The actual number of deaths from diphtheria and membranous croup in Berlin and Germany has been reduced one-half; in the State of New York to 60 per cent. of the former mortality; and in Chicago to 61 per cent. of the former figures. In the city of Philadelphia only a slight reduction has been effected and in London none at all. With these facts before us, and they might be multiplied indefinitely, showing that in the cities and countries where the remedy has been applied the same results have been seen, what shall we say of those who still refuse to believe and continue to cite individual cases in which anti-toxin did no good? In my opinion any physician at the present time who refuses to use anti-toxin in a severe case of diphtheria is guilty of criminal negligence to as great if not a greater degree than a surgeon who would attempt a laparotomy without washing his hands or sterilizing his instruments or dressings.

It is the imperative duty of the physician to immunize every child in the home, school, hospital or other institution who has been exposed to diphtheria.

In sterilized milk lies the hope of immediate improvement in the milk supply for those who are able to pay the additional 2 or 3 cents a quart which such extra cleanliness, care and expert supervision cost.

What hope is there for the great bulk of our city supply? In hot weather the danger is greatest and at such times it is certainly very great. If the facts were known I have not the slightest doubt that it would be found that in summer the greatest part of the milk supplied to our cities, in bulk and sold from the can, would be found to contain some chemical preservative.

At the present time, and until dairy methods have very greatly improved among milk-producers as a class, the best method of securing proper milk for the masses during hot weather would seem to be some form of heating for sterilization at the dairy. Without this, we shall either have in hot weather a milk so laden with bacteria and their toxins as to make it practically unfit for food, or else the use of antiseptics will continue.

Closely connected with the question of infant feeding is that of the milk supply of our cities. It is one of vital importance and one which it is in the power of the medical profession in a very large measure to improve. Of two things we may be certain; improvement will never take place unless we as physicians take the initiative; and secondly, it will not be lasting unless it can be made suc-

cessful from the commercial point of view. Milk companies are not going to be put to a large outlay of expenditure of time and money without the definite assurance of support in this by physicians who made the demand for a clean, high-class milk.

The best practical solution of the question at the present time would seem to be to organize in each city a milk commission under the authority of the leading medical society. The commission should make known to all dairymen supplying milk its requirements, upon the fulfillment of which said dairy should be granted a certificate which shall be to the public and the profession a guarantee as to the composition and cleanliness of the milk.

"HELTHIN."

A New Method of Testing Drinking Water.

Report from the "Unterrichtslaboratorium für angewandte Chemie," at Halle.

By Prof. H. Erdmann.

Abstracted from the *Zeitschrift für angew. Chemie,* 1900, No. 2.

More than ten years ago I expressed the opinion that the chemical method of testing drinking water is essentially superior to the bacteriological one[1]. This superiority is partly due to the fact that it is by chemical examination that we ascertain whether or not the water is a suitable nutrient medium for micro-organisms. But it is more especially caused by the circumstance that the characteristic products of metabolism of the anaerobic and pathogenic bacteria persist for long periods of time in the infected water. They can be detected at an epoch when the pathogenic organisms themselves have disappeared from the exposure to the oxygen of the air and from the growth of harmless micro-organisms. For in a sample of water to be tested the disease-producing organisms themselves are short lived, and very liable to rapid destruction. In point of fact micro-organisms harmful to health may not be found at all in old standing water; but if the fluid has once been infected, nitrous acid can be detected in it months, or sometimes even years, afterward.

I have not, however, found the various methods employed for the detection of nitrous acid, the more important of which will be

[1] Zeitschr. für Naturwissenschaften, 1888, pp. 61, 654.

discussed later on, very satisfactory. For some time past I have been working with a calorimetric method, based upon the passage of the nitrous acid through naphthionic acid-azo-*a*-naphthol in strong alkalin solution.[2] In the absence of a better process this has served me and some of my coworkers fairly well. But at the time of the cholera epidemic at Nietleben, near Halle, in 1892, I came to the conclusion that we require a still more delicate method for the detection of nitrous acid, if it is to be of service for the prevention of epidemics. It was the study of the cholera vibrio which led to the discovery of the presence of nitrous acid as the most important product of degeneration of pathogenic organisms. As long as twelve years ago it was observed by several investigators that a beautiful violet color resulted from the addition of mineral acids to cholera bacillus cultures.[3]

Bujvid, who tested this reaction more closely, found that the color was due to the violet salts of a very characteristic color base. These can be extracted from the solution, when it has been rendered alkalin, by shaking it up with benzol, and crystallize into brownish-red lamellæ.

A new color base, "cholera blue," was obtained from the "cholera red" by dissolving it in concentrated sulphuric acid and then neutralizing with caustic soda. Distillation of the cholera red with zinc dust produced indol.

Thereupon E. Salkowski[4] showed that the cholera bacteria always form nitrous acid, and that the cholera red reaction is simply the well-known color reaction of that substance.[5] We became later cognizant of the fact that nitrous acid is a product of metabolism of numerous anaerobic and pathogenic bacteria. It is, therefore, safe to infer that the test for nitrous acid can be generally employed, more especially in drinking water, as an indication of their presence. But the test must be a delicate and certain one, and simple enough to be carried out under all circumstances without special apparatus.

My experience with well or spring water to be used for drinking purposes would show that the quantity of nitrites present is a good index of its availability. Water only slightly polluted with decayed animal matter gives a reaction showing the presence of nitrites in the proportion of one to one million. Nitrites as abun-

[2] Zeitschr. für Naturwissenschaften, 1889, pp. 62, 360.
[3] Brieger, Deutsche Medicinische Wochenschr., 1887, pp. 303 and 469.
[4] "On the Cholera Red and the Production of the Cholera Reaction." Virchow's Archiv, Vol. CX, p. 366.
[5] Nencki Berichte der deutschen chem. Ges., 1875, Vol. VIII, p. 727.

dant as one to one hundred thousand parts shows that the water is, or has been, the seat of abundant microbic action. In exceptional cases the amount of bacterial nitrite production may cause the nitrites to be one to ten thousand. We can leave out of account very small amounts of nitrites, say 1cg. (1-7 grain) to the cubic metre (35 cubic feet) or less. But for larger proportions, from 1 cg. (1-7 grain) up to 1 gramme (15.4 grains) per cubic metre (35 cubic feet) an approximate quantitative analysis is indispensable to enable us to determine whether a given water is merely inferior and doubtful, or whether it must be absolutely rejected.

In many rural districts, in foreign naval stations, and by the army in the field, it is often of the greatest importance to select the best among a number of available sources of drinking water supply. How imperfectly the methods hitherto at our disposal enable us to do so may be gathered from the words with which Dr. F. Erismann begins his article in the latest edition of Böckmann's work:

"In analyzing drinking water we are rarely obliged to make a quantitative analysis for nitrous acid. A really pure water should not contain any nitrous acid at all; and if a water contains more than the merest traces of it, there is usually abundant evidence of other kinds of its pollution; and such water is evidently unsuited for use, at all events for drinking purposes."[6]

Only traces of the nitrites are thus of practical interest. Water containing such, and hence dangerous to man and beast, is frequently of very good external appearance, and this may be the case even when it contains as much as 1 or 2 grammes (15.4 to 30.8 grains) of the nitrites per cubic metre (35 cubic feet). To draw conclusions as to the availability of a drinking water from other qualities, such as the amount of chlorin present, as is frequently done, is impossible in districts like those of central Germany, where the ground contains alkalin salts, or where numerous brine springs occur.[7]

If we can succeed in bringing the nitrous acid in the water into contact with an azo compound possessing coloring power, the intensity of the color obtained ought to be sufficient for both the qualitative and quantitative estimation of its amount.

Phenylenediamine[8] and analogous bodies must be avoided, as

[6] Lunge, Chem.-techn. Untersuchungsmethoden. (Springer, Berlin, 1899), Vol. I, p. 728.

[7] See Farbenintensitäten Annaheim, Berichte d. d. chem. Ges., 1876, Vol. IX, p. 1151.

[8] Griess; Preusse and Tiemann, Berichte, d. d. chem. Ges., 1878, Vol. XI, p. 624.

the brown colorations are not sufficiently distinctive. And besides this, these diamines are very sensitive to oxidizing agents, with which they give colorations similar to those that they show with nitrous acid.[9]

After numerous experiments I have decided to employ 1-8-amidonaphthol-4-6-disulphonic acid, which is obtained from the 1-3-5-naphthalene trisulphonic acid recently described by me[10] by nitrating, reducing, and heating it with sodium hydroxid.[11]

This acid has the peculiarity of rapidly combining with diazo compounds in acid solutions, and forming mono-azo coloring substances. These latter are especially suitable for the purposes of a test on account of their ready solubility, extraordinary coloring power, and characteristic hue. The test is to be made in the following manner:

To 50 c.cm. (1 2-3 ounces) of the water to be tested add 5 c.cm. (1¼ drams) of a solution of sodium anilin-π-sulphonate containing hydrochloric acid. After ten minutes, for in very dilute solutions diazotation is not completed immediately, add about ½ gram (7½ grains) of solid amidonaphtholdisulphonic acid in the form of its acid alkali-metal salt. If nitrous acid is present a bright claret red color appears, which attains its maximum intensity in one hour. The test may be rendered quantitative by comparison with the ordinarily used solutions, a one to one million, one to one hundred thousand, and one to ten thousand solution of sodium nitrite will serve the purpose.[12] For exact determinations these solutions should be freshly prepared by diluting normal sodium nitrite with water; for in such dilute nitrite solutions micro-organisms, whose activity in time diminish the amount of nitrous acid present, soon appear.

For the same reason we find that there is a decrease in the amount of nitrous acid present when infected water has been kept for some time. The following example, however, will show how the nitrous acid persists after the micro-organisms that have produced it have disappeared:

Owing to the occurrence of an epidemic of anthrax among the

[9] For the same reason the iodin-zinc-starch test should be rejected. (See Kämmerer, Zeitschr. f. analyt. Chemie. Vol. XII, p. 377). In bacteriological laboratories it is still, unfortunately, extensively employed. In considering the waste-water question the free chlorin, ozone, and other oxidizing agents should be tested for, as well as the iron oxid. The results of the iodin-starch reaction would be especially doubtful in a water that has been completely disinfected by these substances.

[10] Ber. d. d. chem. Ges., 1899, Vol. XXXII, p. 3186.

[11] Chem. Industrie, 1898, p. 523; Lehne's Färber Zeitung, 1899, Vol. X, p. 358.

[12] In place of these a paper color scale can be employed.

cattle of a farm in the Hartz Mountains, the owner sent me in January, 1899, two samples of the drinking water used by the animals. Five animals having fallen victims to the epidemic in a few days, the water was changed, and the disease ceased. The veterinary surgeon maintaining that the water could not be at fault, the old well was again used, with the result that the anthrax reappeared. Sample No. 1 was then taken from the well; and, after it had been cleaned, No. 2 was drawn. Both samples contained prohibitive amounts of nitrous acid.

In order to ascertain whether it was only an accidental and temporary contamination, or whether the well was continuously subject to it, ten months later, in December, 1899, I personally drew a further sample, No. 3.

Sample 1.

Nitrites per cubic meter (35 cubic feet) 1.2 grammes (18.5 grs.)

Sample 2.

Nitrites per cubic meter (35 cubic feet) 0.05 gramme (0.8 gr.)

Sample 3.

Nitrites per cubic meter (35 cubic feet) 0.15 gramme (2.3 grs.)

The extraordinarily large amount of nitrites contained in No. 1 remained constant after standing; even a year later it amounted to 1 gram (15.4 grains) per cubic metre (35 cubic feet).

For the determination of nitrites when nitrates are present, Griess' test [13] with α-naphthylamine, officially accepted since 1894 in Alsace and Lorraine,[14] is probably the best. It is fairly delicate, but not very suitable for our present purposes. The test itself can with difficulty be obtained colorless, and does not keep well. Besides this the orange coloring matter is very insoluble, and in hard or saline water is often thrown down in a flocculent precipitate which renders colorimetry impossible. Without questioning the utility of this reaction for testing the presence of nitrosyl-sulphuric acid in sulphuric acid,[15] with which I have no experience, it is not, in my opinion, either delicate or characteristic enough for the examination of water.

Riegler's test [16] is still less desirable. Naphthionic acid and numerous easily diazotizable substance give fluorescent liquids,

[13] Berichte d. deutschen chem. Ges., 1879, Vol. XII, p. 427.

[14] Jahrbuch der Medicinalverwaltung in Elsass-Lothringen, 1895, Vol. VII, p. 130.

[15] Lunge & Lwoff, Zeitschr. für angew. Chemie., 1894, p. 348.

[16] Zeitschr. für analyt. Chemie., Vol. XXXV, p. 677, Vol. XXXVI, p. 377; König, Untersuchung landwirthschaftlich und gewerblich wichtiger Stoffe (2d Edit. 1898), p. 610.

which is inconvenient. My naphthol compound does not fluoresce under the special conditions of the test; and oxidizing agents, such as ferric chlorid, color it yellow. It cannot, therefore, be mistaken for the claret-colored hue on which this test is based.

Helthin is supplied by the General Agents, Messrs. J. F. Schwarzlose Söhne, in Berlin, and the two substances are furnished by them in packages each containing one vial of 30 grammes of the fluid and one tube of six ½ gramme (7½ grains) tablets, sufficient for six tests, at 75 cents per package, including postage, insurance and packing, and may be obtained through Messrs. Schering & Glatz, New York.

HOW TO BUILD TENEMENTS.

As a result of a list of forty-seven questions sent out on June 15 last by the Tenement House Commission, the commission has now at hand, collated in two huge typewritten volumes, what it considers the most remarkable collection of suggestions from all kinds of interested persons that has ever been gathered on the subject of tenement house building.

The commission selected 100 persons prominent in all branches of trades and professions relating to this question. To each of these the list of questions was sent, and in nearly every instance a reply on all the questions was received. There are about 4,700 answers in the collection.

The questions went to architects, builders, owners of tenement houses, merchants and bankers interested in the question, lawyers, doctors, officials of the Board of Health and of the Building Department, settlement workers, clergymen, engineers, sanitary experts, college professors, and officers of charitable societies. The list of architects was chosen largely from those who had filed applications with the Building Department. Many of the owners whose opinions were asked contemplated the erection of new buildings.

To get away as far as possible from answers that would not solve any problem, the questions of the commission were subdivided so that the first called for a categorical answer, such as yes or no, as to whether, for instance, all tenements should be fireproof. Another question under the same heading is, "if not, what form of construction do you consider adequate?" and then there are others about shafts and stairways and dumb waiters, which

amplify the main subject and insure its consideration from all points.

As to the standing of the persons who furnish suggestions, nearly all of the architects are prominent in their profession. Dr. Annie S. Daniel is a physician who has spent seventeen years among the tenement house dwellers in the city, and is said to know their needs better than any other woman in New York. There are Dr. Roger S. Tracy of the Board of Health, R. W. G. Welling, owner of the Cherry Street Model Tenements; Dr. Moreau Morris of the Tenement House Committee of the Department of Health, C. Francis Osborne of Philadelphia, a professor of architecture; Miss Lavinia L. Dock of the Nurses' Settlement, the Rev. Dr. Rainsford, Jacob H. Schiff, the banker; Dr. Feeny, Chief Sanitary Inspector of the Board of Health, and John Martin of the London County Council. In the case of the settlement workers, the views expressed are the result of a conference that was held to pass upon the questions.

Summed up broadly, the writers recommend that not more than 65 per cent. of an inside lot and not more than 85 per cent. of an outside or corner lot be built over; that airshafts be built so that they open on the outer air; that five stories be the limit for a non-fire-proof and seven stories for a fire-proof tenement, except where elevators are provided, and these are almost out of the question in the dwellings for the poor; that owners be forced to provide bathing facilities for the tenants, mainly in the form of shower or needle baths in the basements, and that bath-rooms and closets be provided for every family except where the cost absolutely precludes it.

Common stairways are considered good enough, but every writer agrees that they should be fire-proof. To prevent overcrowding, in the technical sense of allowing too many people to live in the same area, it is suggested that the height of buildings be limited and that it be stipulated by law how many people shall be allowed to the square yard of floor space.

It is significant that the opinion is almost unanimous that the discretionary power vested in the Building Commissioner to increase, in his judgment, to 75 per cent. the space to be built over on inside lots be abolished.

On the question of airshafts there is a great diversity of opinion. Dr. Daniel declares: "There should be none at all. The large airshafts in the newer houses are used for drying clothes." The

architects stand out for shafts, but more from the point of construction than sanitation.

On the height to be allowed, Mr. Baxter leads off by recommending five stories, except where there are elevators and a watchman, and then says that he does not believe that there are half a dozen fire-proof buildings in the city. George Palliser, from the viewpoint of an architect, says: "Allow any height a client can pay for and make safe and lawful; if over five stories, the law ought to compel the use of an elevator."

This elevator question gets a great deal of attention. Dr. Daniel and Miss Dock both declare that it is cruel and physically injurious to compel women and children to climb more than five stories. Prof. Osborne would have an elevator mandatory in tenements over four stories high.

Nearly every architect answers "No" to the question, "Should all new tenements be fire-proof?"

Max Muller adds to this negative answer: "With all advantages, the fire-proof building is surely a detriment to health, in certain cases of rheumatism, for instance." Mr. Welling says he has never been able to see how the tenants could afford to pay rent in a fire-proof building. F. R. Comstock, an architect, answers: "I want to say 'Yes,' but when I stop to consider the expense of erecting fire-proof buildings, and the rent the landlord has to charge to get a fair return on his investment, I hesitate, for I believe that the poor people of New York pay too much for the little they receive." Mr. Martin of the London County Council says that, in his opinion, it is better to sacrifice a life now and then than to increase rents all around.

As to Bathing Facilities.

There are some remarkable answers to the question, "Should owners of tenements be compelled by law to provide bathing facilities for the tenants?"

Samuel Howe, an owner, says: "It is hard to answer this. I have seen tenants use a good bath-tub for a coal box," and Dr. Tracy of the Board of Health, says: "No. This seems to me to be impracticable. Bath-tubs and bath-rooms would almost invariably be used for storage." Architect George Palliser says, "Yes," but adds: "The tenants should be compelled to use them, too—not for duck ponds or coal-bins, either," while Anthony Peyerl, a builder, grows sarcastic, in this vein: "Yes," he says, "if the

law fixes the sum a tenant shall pay for the same accommodation, and guarantees the payment, or the city may furnish some for nothing—in the neck." When the question is appended, "If so, to what extent and in what manner?" all those who have answered the first question affirmatively suggest shower or needle baths as the most available method.

The last question in the list calls out many novel answers: It is: "In general, what suggestions have you to make to the commission with regard to its work?" To this Dr. Tracy says:

"It seems to me that matters relating to construction have been pretty well thrashed out, as shown by the practical agreement among the builders of new model tenements that privacy, safety, and ventilation can be best secured by the fire-proof structure, by outside stairways and floors entirely separated. Although a good deal is done now, more ought to be done toward teaching the poor how to make the best of what they have, the vast importance of cleanliness, good food (and the cheapest is often the most wholesome), and right living. I think the municipality might do something toward this, and that is where an appeal to the Legislature would be necessary."

Mr. Gibson makes the following remarks in answer to the same question:

"It has seemed to me that the commission overlooks the fact that when accommodations are provided better than the lowest class demands, they are taken by a better class, for whom they are, in fact, suited, and the poorest remain uncared for. All model tenements for the poorest provide too much at too great cost. The most recent are as far away as ever from solving the problem. Too much beaux-arts architecture and idealization of health rules, and not enough of financial science based on land values, and a 7 per cent. revenue from the rents, which can be expected, are no good."

Lawrence Veiller, the secretary of the commission, who has done the work of codifying these replies, on interview, said that it was not to be understood that any of them represented the opinions of the commission on any subject. He did not doubt, however, that many of them would be of great help to the commission.

STATISTICS RELATING TO PUBLIC DEPENDENCY.*

By WILLIAM P. LETCHWORTH, LL. D., President.

In order to form a just conception of the possibilities of this important meeting and its bearings upon the interests of our State, we must have in mind that the population of the State exceeds seven and a quarter millions and that its metropolis is the principal entry port of North America for foreign immigrants, including among their numbers broken-down, indolent, and vicious persons from different countries of the Old World. The number of immigrants that arrived at the port of New York during the year ending June 30, 1898, was 178,748, which was nearly 78 per cent. of the entire number that entered the United States during that period, or about three and a half times the number that landed at all the other ports. The alien immigrants that arrived at the metropolis of our State during the fiscal year ending June 30, 1900, numbered 341,712. It is generally overlooked that the vigorous and thrifty immigrants pass on to the West, while a large proportion of the destitute and debilitated, with their enfeebled progeny, remain in this State, a continuous and increasing burden upon its municipalities and its benevolent citizens.

The number of dependents under institutional care in this State, including the insane, on October 1, 1899, was 86,893; the number of offenders, juvenile and adult, supported at the public expense was 12,063, making a total of 98,956 persons. The sum expended by the State, municipalities, and counties for charitable purposes, and for reformatories and prisons, including that for buildings, during the year ending September 30, 1899, was $9,768,515.00, the amount expended by private charitable organizations was $18,517,782.00, making a total of $28,286,297.00†.

It seems relevant to consider at this time what are some of the fundamental principles that should govern us in dealing with the immense aggregation of the dependent and offending classes, for whose proper care we are held responsible.

*Abstract of Presidential Address at the opening of the First New York State Conference of Charities and Correction, held at Albany, N. Y., November 20-22, 1900.

†For valuable statistics embodied in this paper I am greatly indebted to the State Board of Charities, the Lunacy and Prison Commissions, and other State departments.

CLASSIFICATION.

In the institutional care and custody of these classes little or no attention was given at the outset to classification. Every type of unfortunate and debased humanity, including the infirm, the disabled, the sick, the insane, and criminals of both sexes and all ages, as well as homeless children, was housed either in almshouses or jails and prisons. Among the earliest movements toward classifying the incongruous elements with which we had to deal may be mentioned the founding of the New York Hospital for sick and disabled persons, which was chartered in 1771. Out of this institution, with accommodations for two hundred patients, was developed a further and important classification by the creation, in 1806, of a department for the insane. There was also founded in 1806 the Orphan Asylum Society of New York for homeless children. From these beginnings the process of classification has been going on, as our knowledge and experience increased, until we now have special provision for the blind, for deaf mutes, for the feeble-minded—subdivided into educational and custodial divisons—homes for the aged, day nurseries, general and lying-in hospitals, hospitals for crippled and deformed children, an asylum for destitute Indian children, a colony for epileptics, and various other charities that have grown out of the philanthropy and generosity of the citizens of the State. Not only have the sexes been separated in some institutions, but the young have been separated from the aged, the children, the insane, and epileptics removed from the poorhouses, and important subdivisions made in some classes.

By progressive steps we have reached a limited classification of offenders against the law. The Bertillon system of identification has made practicable an extended classification in our State prisons, based on the number of terms the inmates have served imprisonment for felonies. Separate provision has been made for insane criminals; for younger and more hopeful offenders there is the famous Elmira Reformatory, and for short-term prisoners we have the district penitentiaries or workhouses. Thanks to Mrs. Lowell, for young women formerly lodged in jails we have Houses of Refuge. There are also houses of the Good Shepherd under the care of devoted Catholic Sisters, and various other benevolent organizations for girls and young women requiring reformation. For juvenile offenders there have been established the Society for the Reformation of Juvenile Delinquents, the State Industrial School at Rochester, the New York Juvenile Asylum, the Catholic Protectories.

Notwithstanding all that has been done, the important principle of classification should be still further extended in dealing with the dependent and offending classes. This is desirable for both humane and economic reasons.

Classification of Jail Inmates.

Our jails and city prisons are usually designated by penologists as schools of crime. Nearly three-quarters of a century ago De Tocqueville emphatically declared that the county jails of this country were the worst prisons he had ever seen. In 1880, Dr. E. C. Wines, speaking with a comprehensive knowledge of the subject, said that the jails showed little marked improvement since the days of De Tocqueville, and added, that the entire county jail system of the United States was a disgrace to our civilization. The Executive Committee of the Prison Association of New York has expressed the opinion that if an institution were established in every county in the State in which the processes correspond with the inscription on the entrance door—"Vice and Crime Taught Here"—the work of manufacturing criminals could hardly be done more effectually than it is done by our county jail system.

To these county and city institutions there were committed during the fiscal year of 1899 upward of 70,000 persons. In these places of confinement are found those who have been tried and found guilty as well as those who are suspected of wrong-doing. Many are young men who are easily influenced, but who are not of the criminal type. They are here brought into association with the incorrigible criminal and made familiar with every phase of deception and trick of crime. Old offenders against the law take pride in instructing the novice in ways of wickedness, and awaken his enthusiasm by recounting deeds of daring and hairbreadth escapes. It has been demonstrated that it is practicable to construct jails so as to prevent an injurious association of inmates. The object desired will be promoted if prisoners who have been proved guilty are sentenced to the district penitentiaries instead of to continued confinement in the county jails.

Classification of Juvenile Offenders.

The principle of classification is worthy of greater consideration than it now receives in connection with our system of reforming juvenile offenders. Children are too indiscriminately committed to reformatory institutions. Many are sent there on the most

trivial, and sometimes even ridiculous charges. There are some parents who would like to be relieved of the responsibility of caring for their offspring; others, too rigid in their discipline, make home life disagreeable, and their children become rebellious. Many high-spirited boys, through wild associates or lack of proper home influences, become wayward, but do not require institutional training.

To the Reform School should be committed only such children as have proved themselves to be incorrigible; and my heart goes out in earnest sympathy to the host of little fellows who, through an exuberance of youthful spirits or lack of the discipline of a good home, are consigned to the monotony of institution life and the companionship of hardened offenders. It is an offense against humanity to deface unnecessarily the escutcheon of a boy with a criminal record, the effects of which can never be overcome. There is no doubt but that a large percentage of the youths who are now committed to reformatories might have been corrected outside of an institution and put in the path leading to good citizenship by simpler and more effectual means. Let us give these wild and sometimes reckless boys, among whom is some of the best material for making brave men, a little better chance—more of supervision under the family rule and less of institutional confinement and restraint.

It has been demonstrated that a far more successful and less expensive way of dealing with juvenile offenders is that whereby the State provides special agents to protect their interests. Such an officer is obliged to attend the trial of every child under sixteen years of age who is charged with crime, and present to the court such information as he has been able to obtain respecting his history, in order that a just decision may be reached as to the kind of care and discipline best suited to his reformation. The parents may be fined for neglect of duty and the child returned to them with a reprimand, or he may be held under suspended sentence and placed on probation with his parents, or boarded by the agent in a family apart from his former environment. If it is found impracticable, after repeated attempts, to correct the delinquent in the family, he is then placed in a reform school. And even here the principle of classification is applicable. In every reformatory for boys there are those who have become adepts in crime, and who, like their elders in jails and city prisons, instruct the new-comer in the secrets of criminal practices. For this reason a reform school should be conducted on the cottage plan and the boys separated into

small groups, according to their different characteristics—say not more than twenty in one family.

Classification of the Feeble-Minded.

As an additional means of classifying the feeble-minded, it has been recommended that special classes be established in connection with our public school system for the instruction of teachable feeble-minded children not capable of being benefited by ordinary school methods, thus relieving our over-crowded institutions, and, at the same time, affording this class of defectives the benefits of instruction suited to their capabilities without depriving them of the wholesome influences of home life. Such a system has been in operation in Germany for many years, an auxiliary class for children who could not be taught the ordinary school curriculum having been established at Halle in 1863. Auxiliary schools gradually grew out of this and similar classes, and there are now upward of fifty such schools in Germany, with an estimated attendance of 6,000 pupils.

In Norway similar work has been carried on for twenty years or more. Belgium and Switzerland have special schools for the instruction of feeble-minded children, and Dr. Bourneville has recently recommended, for the benefit of such children, the establishment of special classes in connection with the primary schools in Paris and throughout France.

Like means of instruction were adopted in England in 1892, first at Leicester by the School Board, and a few months later by the London School Board. In 1896, a Governmental committee was appointed to inquire into the systems for the education of feeble-minded and defective children, and to advise as to any changes that might be considered desirable. As a result of the recommendations of this and other committees appointed by different influential organizations, an act was passed in 1899, authorizing the creation of special classes in public elementary schools and the establishing of special schools for these children. Provision was also made for boarding children in private homes conveniently accessible to such classes or schools. It is gratifying to observe that a similar system is regarded with favor, not only in New York, but in several other States of the Union.

Classification of the Insane.

During the last two decades great advances have been made in the care and treatment of the insane through the scientific re-

searches of medical men, in the adoption of improved methods, in providing systematic training for attendants and better hospital equipments, and by that reform in this State, ever to be gratefully associated with the name of Miss Schuyler, whereby the insane were taken under the special protection of the State. The steady advance thus made warrants the belief that the tendency of the times is toward still further progress in the care and treatment of this class.

The insane in the care of the State on the first of October, 1900, numbered 22,088, an increase during the year of 714. The average annual increase for a number of years has been sufficient to require the construction each year of a large hospital or its equivalent. But why not apply to the insane the principle of classification and, instead of adding to our already overburdened institutions or constructing more like them, provide the acute insane small hospitals near the large cities, where they may have the advantages which such institutions so located are capable of affording? It is claimed by high medical authority that more cures can be effected in the small institution under an individualized system of treatment than in the large one, where the medical superintendent is overwhelmed with the innumerable details incident to its business affairs. To minimize the popular odium attached to the commitment to a hospital for the insane, an institution of this kind might be called a sanatorium or designated by some other title of a general character. Voluntary admission under proper regulations might be permitted, in order to encourage early treatment of acute cases. Under such conditions, the dread of commitment to an asylum for the insane would be largely dispelled, and the sanatorium would be entered as freely as our general hospitals. With the number of the insane so great as to nearly paralyze our energies there is danger that the importance of early treatment of acute cases may be overlooked. The Lunacy Commission estimates that the ultimate average charge for every patient admitted to a State hospital who is not discharged recovered or improved amounts to about $6,000. Surely we are warranted in exhausting every reasonable resource in treating the acute insane and in dealing with insanity in its earlier and premonitory stages.

In the extension of provision for the insane, I would suggest for careful consideration the establishment of State district colonies for chronic cases and the transferring thereto from our immense hospitals such as are specially fitted for colony life. These colonies should be conveniently and healthfully located on goodly sized

tracts of land and provided with simple, inexpensive cottages, to accommodate say from twenty to thirty patients each, the colony not to exceed altogether from 300 to 500 patients. Here the insane could be given healthful employment, could be classified according to their various conditions, could have more freedom, enjoy a more natural life, and be more economically maintained. I am clearly of the opinion that such a system would tend to a larger percentage of cures, even among the chronic insane, than is possible under the restraints and confinement incident to an immense, over-crowded State hospital.

Special Provision for Consumption.

The new theories that have come to be accepted, through the researches and writings of distinguished physicians, regarding tuberculosis lead to the conclusion that the victims of this disease should be separated from other patients in all charitable, correctional, and penal institutions. It is now held by the highest authorities upon the subject that pulmonary tuberculosis is unquestionably communicable. This being the case, some of our large institutions, as at present organized, are most favorable for its development. Especially is this true of our hospitals for the insane, the inmates of which, on account of their malady, are not strong to resist bodily disease. It is reported by the superintendent of an English lunatic asylum that, since the erection some years ago of separate buildings for the tuberculous insane in the institution under his charge, the number of deaths from phthisis has been reduced nearly 50 per cent. A large percentage in the reduction of deaths from this disease has been effected by founding a separate cottage for tuberculous female patients at the Illinois Southern Hospital for the insane. In the wards and infirmary departments of our almshouses we sometimes behold a shocking disregard of needed separation of tuberculous cases from other inmates. Seldom are proper precautionary measures taken against communicating the disease to others. Whether a person is serving a penal sentence or is a ward of the State on account of illness or from other cause, it is unjust and inhuman to subject him to the dangerous influence of an insidious disease. We shall look forward with interest to the result of legislation in 1899, authorizing the establishment by cities of the first class of hospitals for the treatment of pulmonary tuberculosis, and of the action of the Legislature of 1900 in establishing an experimental hospital for the treatment of incipient pulmonary tuberculosis.

Dependent Children.

The care of dependent children is such an important subject that it will receive large consideration by this conference. The benefits that have been shown to result from the early placing out of homeless children in families have been so manifest that there is a strong and growing tendency to make available to a greater extent than heretofore the family home as a saving agency. The large accumulation during recent years of children in orphan asylums, and the long retention of many of them in these institutions, have strengthened the opinion expressed in some quarters that we should do away with the asylums altogether. A measure so radical, if it were practicable, would result in immeasurable disaster. The saving work performed by earnest men and women through these institutions is incalculable, and the State and the public are greatly indebted to these devoted workers. We still need the orphan asylums and the coöperation of the benevolent spirit sustaining them.

A mistaken idea exists in regard to many of these institutions, particularly those in the smaller cities and rural towns, it being thought that all their inmates could be placed in families if the managers would consent to do so. The facts are, that there are a great many children in the asylums who have been placed there temporarily to tide families over misfortune, and prevent them from breaking up and falling into the dependent class; some are mentally and physically defective, and there are many homeless waifs for whom the door of a respectable family is not readily opened, the time required to fit them for family life being longer or shorter according to their habits and previous environment. Some children are in a condition to be placed out as soon as they are supplied with comfortable clothing, others require more or less training and discipline before they are welcome in a good private home.

The primary aim of orphan asylums is to prepare children for family life, and their usefulness is measured in a great degree by the activity of their placing-out system. It would, therefore, seem well for these institutions to consider the best means of reducing their numbers to the most desirable limit. Whether the children be placed out by agents of the asylum or by coöperation with other agencies, it is important that the State should exercise supervision over them. The neglect and cruelty from which some children have suffered by an injudicious selection of homes warn us that their interests should be carefully protected after they are placed in families. I cannot forego the opportunity this occasion affords of earnestly recommending that not only the dependent but the

delinquent children of the State be guarded by a special State agency, in which shall be vested ample statutory powers to extend over them such protection as it has been found practicable to exercise in Massachusetts, Michigan and elsewhere by this means.

THE RELATION OF CONTAGIOUS DISEASES TO SCHOOL WORK.*

By S. H. DURGIN, M. D., Chairman of Boston Board of Health.

He said: I am called to a place to-night with directions to speak on the relation of contagious diseases with school work. I fancy this is a question of school inspection, and that there could not be in a place like Waltham a relation of diseases and school work. We have tables which go to prove the facts we are about to speak upon, but fortunately for you I could not find them in my office, and thus you are saved from hearing a lot of dry statistics.

It is a fact that if you make tables for 10 or 20 years you will find a constant increase of infectious diseases during the school season. This is due to the mingling of the children and their peculiar habits. They will swap slates, pencils, books, and in many other ways have habits which will communicate infectious diseases from one to another. In kindergartens their caresses and squabbles bring them in such close contact that it is easy to catch a disease. I claim that school children, with their peculiar habits, are liable to convey the disease from one to another.

Among school children there are various ways of contracting a disease, as with the slate, sponge, putting lips to the ends of pencils, spitting on the slate, rubbing fingers back and forth on slate and then moving them to the tongue, exchange of articles in school; so there are many ways in which transference is very easy for disease. There are times when the disease is taken much more quickly than others, and children are much more susceptible than adults.

I can give you a few figures regarding the relation of disease to school work in our Boston schools. For the fourteen months including November and December, 1894, and the year of 1895,

*Abstract of address at the meeting of the Waltham Educational Society, Waltham, Mass., Nov. 14, 1900.

there were 16,790 children examined. Of this number 6,053 were found to be not well, 10,000 ill, and 2,041 sick enough to be sent home. Of the number examined 453 had contagious diseases. That number of children were sitting alongside well ones and exposing them to the disease.

In 1896 there were 8,964 children examined. Out of this number 1,156 were found too ill to remain in school, and 267 had infectious diseases. When that number of sick children are allowed to remain in school one day, think of the number of children being exposed, and when two days how much more certain are the well ones to become infected. A sick child should be kept in school the least possible number of minutes.

In 1899 there were 468 specific infectious disease cases; oral and inspiratory, 2,738; ear, 144; eye, 434; skin, 3,252; miscellaneous, 10,413, making a total of 17,449. The 468 children in a condition to give off infectious diseases to well children is perhaps 75 per cent. of the infectious diseases that exist in those schools, for there are a large number not known. In the Boston schools there are upward of 80,000 children, and we could not attempt to examine all of them unless our force were considerably increased.

The teacher knows her little flock, and any abnormal condition in the child should readily be seen by the teacher, so that it is eminently her duty to have an oversight of the children. When any abnormal conditions are found they should be brought to the doctor's notice and let him say whether it is too ill to stay in school.

It seems to me that our experience teaches us that diseases are in the schools and that they exist to a degree which should engage the attention of all School Boards, Health Boards and citizens who have the welfare of schools at heart.

Having established facts, it remains for us to find a remedy; that remedy lies with the Board of Health.

Among what kind of people would you go to find those cases; where so convenient as in a crowded school-room?

In regard to the importance of early discovery, take a school room having 50 or 60 children. Perhaps two or three have an infectious disease. One has diphtheria, one scarlet fever and one measles. Any one of these infectious diseases would spread more rapidly there than anywhere I know of. The sooner the scholars are seen after the morning session and the sick children picked out the better.

We should have a general supervisor of the school children. In this same relation it is equally important we should see these children. There should be a supervision of care at home and a certificate should go with a warrant allowing children to return to school. I have had a mother come in my office with a certificate in one hand and a child peeling with small-pox in the other, asking to have it returned to school.

We have doctors and doctors. You probably have the same. I don't know why you should not; almost every community has them. We have doctors who give certificates to children for readmission to schools when they are in a condition to spread the disease broadcast.

In diphtheria cases we require two negatives; the last is taken by one of our agents. After we get them the statute steps in and says the children shall stay out two weeks longer before they can return to school.

We send out bulletins each day to the schools giving names of children who are sick, where they live and when they are discharged. We also send bulletins to the 50 physicians of the different districts, they to report back whether the child is properly isolated. If not properly isolated we send the ambulance and remove them to the hospital till the hospital is full.

At the conclusion of his address, he said that as he did not know just what it was desired to learn, and thought that his address might have suggested some questions, if questions were asked, perhaps he could answer them, and the facts mostly desired be obtained.

In response to various questions Dr. Durgin said that it would be difficult for him to give off-hand the percentage of scholars enrolled in the Boston schools who are sick with infectious diseases; that there are upward of 80,000 children enrolled, and that he is receiving reports of perhaps from 75 to 80 cases of infectious diseases quite prevalent. He attributes the spread of the diseases to the large number having them in mild form that have not been discovered; that in Boston the city is divided up into 50 school districts, each one of which has an inspector, each one of whom has from 1,500 to 2,000 scholars under his care; that when the Board of Health is notified by the school teacher that she has a sick child, the inspector in that district is in turn notified and makes an examination of the child, and if found to have an in-

fectious disease it is put in isolated quarters; that the physicians who are inspectors receive a salary of $200 per annum, and that they are an intelligent set of men, of from three to 30 years' experience, who work for the interest of the city; that once in a while, perhaps once in two months, a meeting is held at the Board of Health office, at which the inspectors are present and matters pertaining to the work discussed; that in this way much valuable information is obtained.

Dr. Durgin thought school houses should be swept oftener than once a year, in vacation time; when swept the floor should be first covered with moist sawdust to prevent the dust from rising and settling over the walls and different articles in the room; that he did not believe in feather dusters, but that the walls, doors, wainscoting, window sills, etc., should be wiped with a cloth, dampened with disinfectants. He said that when a child was put in isolated quarters no one should go to and from that room but the nurse and physician, but that it was almost impossible to make this the case; that the child was best isolated when taken to a hospital; that the drinking cup and towel were good ways of transferring infection from one to another; that he did not believe in free text books, because they are exchanged between children, and he thought that each child should have its own book and pencil; he believed the pencil was the article guilty of causing the spread of much infection.

MILK INSPECTION IN LEIPZIG.

In transmitting to the Department of State a translation of the new rules and regulations governing the inspection and trade in milk, as adopted by the City Council in Leipzig, Consul Warner, under date of July 24, 1900, reports that the old regulations were abolished at the instance of the Advisory Board of the Saxon Agricultural Department for the reason, chiefly, that their requirement of 3 per cent. of fat in the milk could not always, even with the best intentions on the part of the farmers, be complied with. The present regulations reduce the fat requirement in the milk from 3 per cent. to 2.7 per cent.

The amount of fat in milk could be increased by artificial fodder, such as cotton-seed-oil meal, cocoa meal, and other foods contain-

ing high percentages of oil; but the milk thus produced could not be used in a raw state. Such milk would be very unhealthy for children and could only be used for butter making, and every mother would be obliged to return to milk containing less fat but which would be perfectly healthy.

The new standard of 2.7 per cent. of fat in milk is the prevailing one throughout Saxony. Of ninety-five cities and towns, only fifty-nine contain any articles in their regulations concerning the lowest allowable percentage of fat. The following gives the percentages of fat required by these fifty-nine cities: Forty-five, 2.7 per cent.; four, 2.6 per cent.; three, 2.5 per cent.; three, 2.4 per cent.; two, 2.8 per cent.; and two, 3 per cent.

The rules and regulations governing the milk question in Leipzig cover the appointment of officials, the places of milk inspection, testing the amount of fat in the milk, its specific weight, the milk books of the officials, guarding against irregularities, analyses in chemical laboratory, guarding the public against the sale of unhealthy or adulterated milk, etc., and are too extended and too technical for publication in detail. The part relating to milk for children is, however, given as likely to be of special interest to the officials and philanthropists having the same interest in charge in our towns and cities.

MILK FOR CHILDREN.

Milk for the use of children, infants, invalids, etc., must be full milk, one quality, and can only be sold by those dealers who have received special permission from the City Council. A person who wishes to keep cows for the purpose of producing milk for children, etc., has to report his intention to the City Council and request permission to do so.

The requirements for such permission are as follows:

1. The applicant must be a reliable person who has had experience in the milk trade or who has some experienced persons in his employ.

2. The stables in which cows are to be kept must not only be large enough, but must fulfill the hygienic conditions as well.

3. Only such cows are allowed to be kept in these stables as give milk for children; each cow must be so marked or branded that it will be impossible to mistake. The council is to be immediately notified whenever any new cow is added to the stable.

4. All cows must be healthy and show no reaction after the customary injection of tuberculosis lymph. Each cow must receive the lymph injection before being placed in the stable; and at any

time thereafter such injection can be repeated, at the discretion of the council.

5. The sickness of any cow must be immediately reported (by the veterinary surgeon having superintendence of the stable to which it belongs) to the council. Any such cow can be removed from the stable at the discretion of said veterinary.

6. The cows are to be fed, cleaned and cared for in a proper way. All food which, in the opinion of the veterinary, is inappropriate must be dispensed with.

7. Every person employed in milking, feeding or otherwise looking after the cows must submit a certificate from a physician certifying that he or she is free from infectious or nauseous diseases (especially tuberculosis). These certificates must be submitted by the proprietor of the establishment to the supervising veterinary at least once in six months.

8. Stables, cows and all utensils and cans used in milking, storing and transporting the milk are to be kept in a scrupulously clean condition.

9. The well-strained or centrifugally purified milk is to be well cooled and delivered to the customers as soon as possible. When the milk is not delivered direct to the consumers, but, instead, goes through the hands of milk dealers, it is to be sold only in bottles provided with patent stoppers and closed with the private seal of the producer or insured in a similar manner.

10. Stables and every establishment in the city of Leipzig are under the control of the district physician; in the suburbs they are under the supervision of an official veterinary surgeon, no matter where the stables or stores may be located.

The veterinary must make an inspection, etc.

Consul Warner adds that cows which give milk for children are not allowed to feed in pastures, but are confined to stables and fed dry food, such as hay, meal, etc.

SAUSAGES IN GERMANY.

Consul-General Guenther writes from Frankfort, July 27, 1900:

"At Zwischenahn, Grand Duchy of Oldenburg, the agrarians have formed a stock company for the manufacture of sausage and other articles of meat.

"According to the 'Butchers' Gazette,' this company has repeatedly shipped sausage which was pronounced by the meat inspection at Brunswick as of inferior quality or as unfit for consumption. It seems that 1,000 pounds of sausage furnished by the company at

Zwischenahn to a merchant were rejected by the inspectors. These 1,000 pounds of sausage, as also 100 pounds of red and liver sausage sold to a keeper of a restaurant, were pronounced entirely unfit for consumption, and were destroyed."

Under date of July 24, 1900, Consul-General Guenther says:

"The question whether the coloring of sausage is an adulteration has been decided by the appeals court of Mannheim.

"An importer of meats was sentenced to a fine of 30 marks ($7.14), but on appeal was acquitted. The court held that in this case a coloring of American sausages did not constitute an adulteration of an article of food. The law could have made coloring an adulteration. This, however, is not the case. An adulteration would exist generally if a state of affairs were created which was not what was claimed. In this case a method is used by which perfectly sound meat will preserve a healthy color for a long time and look appetizing. The meat remains faultless. The appeal was therefore sustained."

TOMATOES AND CANTALOUPES IN EUROPE.

Vice-Consul Hanauer, at Frankfort (August 19, 1900), says:

"English statistics show that of late there has been a large and rapidly growing importation of tomatoes, the Canary Islands furnishing the supply, which importation amounted to 16,389 tons during the first half of this year. The wholesale price of this quantity was £331,302 (about $1,655,000). Tomatoes were but a short time ago an article of luxury in Great Britain, only used for the pampered palates of the rich; but now they have become a common dish on the table of the working classes. In Germany fresh tomatoes are sold at high prices (6 to 14 cents a pound, according to season); they are chiefly used to flavor meats, not stewed. Only the best hotels and the wealthy buy fresh tomatoes, which are supplied to Germany mainly by Southern France. Canned tomato pulp is to be found at the grocers' of large German cities, offered at a lower price, comparatively, than the fresh fruit.

"Cantaloupes are a great delicacy—even more than the pineapple—in German cities. They sell at 2 to 6 marks (50 cents to $1.50) apiece, weighing 3 to 10 pounds. Some of these are brought from Spain; others are raised in German hothouses. Considering that tomatoes have been sold as low as $5 a ton in Delaware and New Jersey and that fine cantaloupes can be bought in Philadelphia at 1 to 3 cents apiece, the question arises, Why don't we export fresh vegetables to Europe? The growers of our

Atlantic States should form an export association, which—if it will send out men of mercantile ability who can speak German and French—would find the European continent, as well as England, an excellent market for their produce. No country could compete with us in the export of agricultural and industrial products were we to adopt the mercantile methods of European traders."

LOUISIANA FISHERIES.

The people of New Orleans and Southern Louisiana have recently instituted measures for the protection of their fisheries from the careless and extravagant methods of dredging prevailing that will soon, if not stopped, exterminate the oysters. The "Times-Democrat" calls attention to the great wealth Louisiana possesses in her fisheries and the almost illimitable development of which they are capable. For a century and a half the people have enjoyed its splendid oysters, river and lake shrimp, pompano, Spanish mackerel and sheepshead—and enjoyed them thoroughly—but the idea never seemed to have entered their heads that these fish were placed here not for their benefit alone, but were mines of wealth from which the people of the great interior could be supplied, " to their great pleasure and enjoyment, and our own profit. It is only in the last few years that we have recognized and have begun to utilize these resources.

"A mere glance at the map of Louisiana is sufficient to show that it ought to be one of the greatest fishery States in the Union. It contains the largest body of water, the greatest extent of lakes, bayous and rivers—indeed, more than two-thirds of its area is a network of interlocked streams. Its coast line is greater than that of any other State save Florida, and contains a succession of bays and estuaries admirably adapted for the cultivation of oysters and other shell fish. Finally, its streams and bays contain an abundance of food for its fish, oysters, crabs, etc., which can always be counted on as fat and delicious.

"Under these circumstances, it was to be expected that Louisiana would be one of the leaders in the value of its fisheries. But instead of this being the case, these fisheries have received little consideration. We supplied the local demand and nothing more until of recent years.

"A few years ago Louisiana introduced its shrimp to the world,

and they were pronounced fine—although the world does not share with us our delicious river shrimp. The so-called lake shrimp now find their way to every continent, and Louisiana is the greatest shrimp producer and exporter in the world. Europe takes thousands of cases, and China luxuriates in Louisiana shrimp by the hundreds of barrels.

"From the earliest days the Creoles had eaten the domestic oysters—they were shouted in the streets a century and a half ago as 'Baratarias'—but no one thought of exporting them then. Now Louisiana and Mississippi oysters are sent by the thousands of tons to all parts of the West and even to the Pacific coast. They are popular everywhere, and are pronounced unequaled in flavor and delicacy, and superior in every respect to the famed Chesapeake oyster. The industry has grown to such proportions as to afford a living to thousands of families.

"Within the last few weeks it has developed that even the despised catfish, which we repudiated of old with scorn as fit only for the negroes, has come into favor in the North and West as trout and salmon, and is under these names popular everywhere.

"Here are fisheries which have attained importance and are proving highly profitable, whose possibilities were undreamt of a few years ago. Seeing what has been accomplished in so short a time, and with so little effort, we can reasonably hope to do far better in the future. The extent of devlopment of these fisheries, for instance, are, as we have already said, almost without limit. There are enough shoals available for oyster planting to feed the world, and the streams that are the homes of the catfish can supply more 'tenderloin trout' than the whole country can possibly consume.

"But these natural resources must be used intelligently and not extravagantly. The finest oyster beds will be very soon destroyed and the oysters exterminated if a system of dredging by which the young oysters are killed off is permitted. We have seen how the Chesapeake beds have been ruined by the oyster pirates of Maryland and Virginia and by reckless dredging; and Louisiana should make sure that it does not suffer a similar loss. These natural resources are given us to enjoy intelligently, and they should be well protected against injury or destruction. If so protected, Louisiana will find in its waters wealth almost as great as in its fertile lands."

THE WELSBACH LIGHT.*

The procuring of artificial light by some means other than using the flame of burning carbonaceous material in the ordinary candle, lamp or gas burner, has been the aim of many investigators. As a result of this endeavor, we find on the one hand lamps in which carbon is heated to a point where it gives off light—or becomes incandescent—as by the passage of an electric current through an incandescent filament or arc lamp crater; or, on the other hand, lamps in which the incandescence of certain substances (oxides of certain of the elements for the most part) is produced by the application of a heating flame or the passage of an electric current to raise their temperature. Of these latter burners, the development of those using a heating flame applied to produce incandescence of rare earths is the particular thing dealt with in this report, but it seems impossible to avoid a mention of others when giving an outline of the chain of discoveries and inventions leading up to the Welsbach light of to-day.

It is probable that Drummond is one of the earliest discoverers of the fact that heated oxides of certain elements incandesce. Certainly he made the first practical application of the fact. Every one knows of the Drummond or lime light which has been so commonly used in the projection lantern. A piece of lime, or better, a piece of oxide of magnesium, or, most refractory of all, a piece of oxide of zirconium, has an oxyhydrogen flame play upon it and is thereby heated to a temperature at which it incandesces and gives off an intensely bright white light. Lieutenant Thomas Drummond, in the English Government service, made this discovery in 1826, and used it in connection with his heliostat in surveying work, and afterward proposed the same arrangement for lighthouse service.

In 1868, Le Roux, Professor at École Polytechnique, Paris, discovered that a brilliant incandescent light might be procured from a rod of lime or magnesia by heating it until an electric current passes, this afterward maintaining the light.

In 1879, Jablochkoff patented the use of a piece of kaolin as a

* Abstract of the report of the Franklin Institute (from *The Journal*, December, 1900), through its Committee on Science and the Arts, on the exhibit of the Welsbach Light Company, of Gloucester City, N. J., referred by the Bureau of Awards of the National Export Exposition. Sub-Committee.—Arthur J. Rowland, Chairman; C. A. Hexamer, Wm. McDevitt, Frank P. Brown, Moses G Wilder.

source of light, making it incandesce by passing an electric current through it. He had noticed that the kaolin he had placed between the carbons of his arc lamp assisted the illumination.

These inventions show something of the development of knowledge regarding materials which might be made incandescent and the means taken to make them incandesce.

Several years later, in 1881, W. M. Jackson (an American) invented the device of a lamp made of platinum, iridium or other materials non-oxidizable at high temperatures, in the form of wires of small section which were heated to incandescence by the use of a heating flame. He discovered that the finer his wires, the more intense the light produced. Here is a beginning of a mantle light.

In 1881, Charles M. Lungren, of New York, patented in the U. S. Patent Office an improvement in illuminating apparatus which consisted in passing a non-luminous gas flame through a heater of clay or similar material highly heated by jets of the non-luminous gas, and forcing atmospheric air through the heater and causing it to mingle with the non-luminous gas issuing in one or more jet flames against lime, magnesia, zirconia or similar material, said body having the structural form necessary to envelop a gas flame and to be rendered incandescent by such flame.

This application, after allowance by the Patent Office, was permitted to lapse, and no patent was then issued.

Mr. Lungren, however, renewed his application in August, 1885, and the patent, which embodied improvements upon his unissued patent of 1881, was issued July 5, 1887 (No. 365,832). Subsequently, a second patent (No. 367,534), describing specific features of his incandescent lighting method, was issued to Lungren under date of August 2, 1887.

In the first of these patents Lungren describes his method of making refractory filaments for lighting composed of "lime, magnesia, zirconia, etc.," by preparing a plastic mass of these materials, or mixtures of them by kneading them with water, or, preferably, a solution of a mucilaginous binding material, such as glue or gum, or other combustible material which will be consumed in the further treatment of the filament. When the mass is of the proper consistence, it is put in a press and the filament is obtained by expressing the material through a die. Immediately after their formation, and while still moist, the filaments are formed up into various shapes desired by bending or coiling over a mandrel of wood coated with plumbago, or other device, and then dried, when

they are ready to apply to a support and to be used in connection with a gas flame, in substantially the same manner as the well-known Welsbach mantle.

The Lungren incandescent lighting system was the subject of investigation by the Committee on Science and the Arts of the Franklin Institute in 1891. Prolonged practical tests of the Lungren filaments showed that they possessed unusual life duration in service, with satisfactory lighting quality, and the award of the John Scott Legacy Premium and Medal was made to the inventor.

For reasons unknown to your committee, this promising invention was never commercially exploited.

The next year (1882) a Frenchman, Charles Clamond, invented a lime light operated without oxyhydrogen flame by intensely heating the air used and directing the flame of his air and gas mixture against the refractory oxide chosen. He knew of the possible use of certain other metallic oxides to produce an incandescent light, and even invented a basket or mantle of magnesia threads, supported in an enclosing platinum mantle of small wire and large mesh, which was hung below the lamp and the heating flame directed down into it. The threads were made from magnesia which was calcined and pulverized, then made plastic by mixing with salts of magnesia, which may be afterward decomposed by heat, then squirted through a die, woven into a basket form and dried and baked.

In 1885, Otto B. Fahnehjelm, a Swedish inventor, secured an American patent (see U. S. Patent No. 312,452, February 17, 1885) for an incandescent light which consisted in the combination with a suitable gas burner and a shade holder of means for suspending an incandescent body in the flame of the burner, and for adjusting the incandescing body horizontally and vertically in relation to the flame. The Fahnehjelm light consisted substantially of a series of rods of calcined magnesia, resembling the teeth of a comb, held in a suitable frame and suspended in a non-luminous flame of gas.

In 1886, Galopin and Evans (in Australia) produced a lamp burning hydrocarbon vapor mixed with air to produce a heating flame, directed downward into a woven platinum mantle, which was thus made incandescent.

About this same time, or even a little earlier (1885), Carl Auer von Welsbach announced the invention of a lamp in which the rare oxides of lanthanum, yttrium, zirconium, etc., in a finely divided condition, were rendered incandescent by heating to a high

temperature. The source of light was a light network of cotton thread impregnated with a solution of the salts of the combined nitrates, oxides or bromides. After being saturated with these, upon exposure to heat, the supporting cotton network was burned out, the salts converted into the oxides and a skeleton hood or cap thus prepared, which would incandesce when a heating flame was applied to it.

The absolute originality of this form of mantle and method of manufacture should be carefully noted.

The nitrates of the metals, being very soluble, were especially adapted to the process, although sulphates, iodides or bromides could also be used.

Welsbach found that this mantle, as it came to be called almost from the first, could resist the action of all atmospheric air fit to breathe for an indefinite length of time, was not changed by exposure and would remain effective for a long time.

For the next five years or more von Welsbach was constantly at work making elaborate investigation of the properties of all oxides of metals which would incandesce when used separately and when combined in various mixtures. He invented processes whereby the salts of the metals required for impregnating mantles might be prepared from the natural ores, originated means for strengthening the frail mantle, arranged the mantles for transportation in safety and perfected many details making the lamp practical.

It is interesting to notice that the form of mantle and the general process of manufacture have remained up to the present precisely as von Welsbach originally planned them, without improvements or essential modification of any kind.

One or two of the discoveries of von Welsbach are necessarily mentioned a little in detail to explain the magnitude of the investigations he conducted and the sort of results he procured.

A patent, No. 409531, August 20, 1889, explains that the illuminating power is greatly increased by adding thorium oxide; that lanthanum oxide without sufficient thorium oxide crumbles when incandescent—with it the mantle becomes flexible. Later he found (patent No. 563524) that thorium oxide, by the addition of a small per cent. of uranium or cerium oxide, has a very high illuminating power, producing a vivid and nearly white incandescent light, in spite of the fact that the thorium oxide alone radiates little light which is yellow in color, and that uranium oxide alone radiates little light, and it is yellow reddish. Still later he discovered that

the illuminating power of lanthanum, cerium, yttrium, zirconium and other metals of the refractory earths is greatly increased by the addition of thorium oxide (ThO_2); that cerium not only gives a yellow light (very desirable color), but greatly increases the life of the mantle, causes it to hold its shape better, and makes it in every way stronger and more durable.

Thus we get a slight idea of the elaborate researches conducted by Dr. von Welsbach, and of the many difficulties which had to be overcome before the Welsbach mantle could become practical and commercial.

To complete the story of lights procured by the incandescence of metallic oxides, mention should be made of the lamp invented by Prof. Walther Nernst, of the University of Göttingen, early in 1899, the substance rendered incandescent being a magnesia rod through which an electric current is passed after preliminary heating. Not only is this light related to the same group as the Welsbach, not only does it give a very modern illustration of a sort of lamp mentioned earlier in the report, but (most interesting of all) in his latest work Nernst gives up the magnesia and uses the same mixtures of oxides as used in the Welsbach mantle—zirconium, thorium, cerium, erbium, etc.

A very brief description of the lamp and mantle made for use with illuminating gas by the Welsbach Light Company, of Gloucester, N. J., will give the best idea of present methods and serve to bring out some important points with reference to the light-giving power, durability and economy of the mantle as put on the American market. The Welsbach "J" mantles (standard until very recently) were made about as follows: A six-cord cotton thread was woven on a knitting machine forming a tube of knitted fabric of rather open mesh. This web has the grease and dirt thoroughly washed out of it, is dried, then cut into lengths double that required for a single mantle. It is then saturated in the fluid (described later), wrung out, stretched over spools and dried. Next, the double length pieces are cut in two, the top of each piece doubled back and sewed with a platinum wire which draws the top in and provides a means of supporting the mantle when finished from the wire holder. After stretching the mantle over a form, smoothing it down and fastening the platinum wire to the wire mantle holder, the mantle is burned out by touching a Bunsen burner to the top. The cotton burns off slowly, leaving a skeleton mantle of metallic oxides, which are unconsumed, and which preserve the exact shape and detail of every cotton fiber. The soft

oxides are then hardened by a Bunsen flame. During burning out and hardening, considerable shrinking takes place. This finishes the process, except the immersion of the mantle in crystalline, to prepare it for transportation, after which it is trimmed and packed. The fluid in which the cotton webbing is immersed is procured from monazite sand, which yields in the finished mantle oxides of thorium and cerium.

The candle-power of mantles of the sort mentioned is about 75 initial candle-power under gas pressure of Philadelphia illuminating gas. This means 20 candles per cubic foot per hour (an ordinary 8-foot fishtail burner gives not over 3 candle-power per cubic foot per hour). The life of the mantles is probably not much below 1,000 hours. The candle-power drops quite rapidly at first and more gradually afterwards, going as low as to one-half the initial candle-power before the mantle breaks.

It is hard to tell how much the perfection of detail in burner construction, a proper selection of chimney, and artistic features of design have contributed to procure the very large commercial use of the lamps. Without proper burners the mantle would be of small value. The details of the common burner, the peculiarities of which make it different from the ordinary Bunsen burner in adjustment of gas and air, the gauge-distributing device to spread the flame over the whole mantle and so fill the mantle, are too well known to merit detailed description.

The mantle first made in America, in 1888, gave only 35 to 40 candle-power initial, under 10-10 pressure, using 3 to 3·2 feet of gas on 3-inch mantles, and under ordinary conditions not over 8 candle-power per cubic foot of gas used.

The new mantle, known as Balm Hill or, popularly, "Yusea" mantle, has a much more open mesh than the "J" mantle, and is made on lace-making machinery. It is thus supposed to be much stronger than the older mantle, and gives about 100 initial candle-power at the mantle when the gas and air are properly adjusted in the burner. Your committee has been unable to gather data of life or decline in candle-power in time to include them in this report.

Certain defects in the mantle light should not be entirely passed over. The mantle is exceedingly fragile and cannot be made to stand where it is subject to continued vibration; the quality of the light is such as to require the adjectives cold, ghastly, harsh, in describing it; and often a greenish tinge in the light is evident.

The candle-power drops badly early in the life of a mantle, and is especially subject to this trouble where there is much dust in the air; the oxides seem to volatilize slowly from the mantles, as evidenced by the shrinking in size of strands of mantle and the white deposit on chimney, for platinum melts easily in the part of the flame where the mantles hang.

If the mantle breaks, a hole being thus produced in it, the hot flame strikes out through this, often breaking the chimney and as a secondary result destroying the mantle itself.

On the other hand, the advantages in the use of the mantle for lighting are shown not only by statements already made, but also by the fact that artificial lighting has been profoundly affected by the commercially successful mantle. We have systems of lighting using mantles now in which the source of the heating flame is gas, gasoline, kerosene. There are systems using Welsbach mantles in which pressure of large amount, and others in which low pressure, is used. There are two great companies, the Welsbach Commercial Company and the Welsbach Street Lighting Company, that do an enormous business and deal only with the use of the Welsbach mantle in lamps using ordinary illuminating gas.

The patents held in this country by the Welsbach Light Company are very broad and fundamental, and have to do with all sorts of details of the system as well. Some of these are not to Welsbach, and yet are for processes of importance in the manufacture of the present American-made mantle and lamp.

In consideration of the enormous advance in the art of artificial lighting made possible by the invention of the Welsbach mantle, the Franklin Institute awards the Elliott Cresson Medal to Dr. Carl Auer von Welsbach, of Vienna, Austria, for his discoveries regarding the metallic oxides which may become incandescent when heated, and for the invention of a mantle by the use of which these metallic oxides are commercially available as sources of artificial light.

Also, in view of the many details wrought out by the Welsbach Light Company, of Gloucester, N. J., in putting a thoroughly practical mantle on the market, the Franklin Institute awards to them, the said company, in addition, the Edward Longstreet Medal of Merit.

JOHN BIRKINBINE, *President.*
WM. H. WAHL, *Secretary.*

MEDICAL EXCERPT.

By T. P. CORBALLY, A. M., M. D.

TREATMENT OF CHRONIC BRONCHITIS.—In a communication to the Société de Biologie ("Progrès Médical," Dec. 22, 1900) Dr. Korab thus indicates the treatment most successful in diminishing the cough, changing the secretions, in destroying pathogenic agents, in inducing cicatrization of ulcerated and inflamed surfaces, in increasing the appetite and thus improving the general condition of chronic bronchitis, even when it is a symptom of incipient tuberculosis. Dr. Korab has shown that helenin (Inula-camphor) modifies the reflex system and consequently the cough, moderates the nutrition and acts as a eupeptic agent. Its action on the glands, and especially on the mucous of the bronchial tubes, has been demonstrated by Claude Bernhard and Vulpian.

Dr. Korab, in a communication to the Academy of Sciences, and Dr. Pillatte, in his thesis on the subject, have also demonstrated the valuable properties of helenin (Inula-camphor) as a destroyer of microbes; its elimination through the respiratory passages increases the repair of the ulcerated surfaces which may have followed the chronic bronchial lesion. Used internally it is found to be antiseptic, expectorant and antispasmodic in a number of cases. It is soluble in alcohol, ether and oils, but is best given in the form of pills, gr. 1-6 to 1-3, five or six times a day. Merck's pills have been found reliable; he recommends five to ten a day, the strength to be recommended by the physician.

NOMA.—M. Guinon presented to the Société de Pediatrie ("Progrès Médical," Dec. 22, 1900) a child that had been cured of *Noma*. This terrible disease is properly cancrum oris or gangrene of the mouth. The treatment employed by M. Guinon consisted of cauterization with the thermocautery and intersticial injections of oxygenated water around the seat of the mortification, 2cc. of oxygenated water diluted to 1-5. These injections manifestly exercised a very favorable action, by limiting the spread of the gangrene and also on the effort to eliminate the eschar; but they have the inconvenience of being painful. During convalescence, this child, much weakened by the disease and suffering, was

attacked with purulent pleurisy, which M. Guinon treated for empyema, and finally, with oxygenated water employed as a local application and a wash as one part to ten. The little patient may now be considered cured and on the road to perfect health. M. Guinon insists on the advantage of oxygenated water employed as a local application and a wash around the walls of the suppurating cavity.

ENDOCARDITIS.—M. Tollemer read a report ("Progrès Médical," Dec. 22, 1900), prepared by M. Barbier and himself, describing a case of vegetating endocarditis, with multiple emboli, and also aphasia occurring in a case of acute articular rheumatism.

The little patient suffered during four days with febrile attacks before the pains and the swelling of the joints came to indicate the true rheumatismal character of the attack, and this attack followed the usual course, with favorable symptoms, until, the seventh day, without any premonitory symptoms, the fever and the pains having ceased, the patient was attacked with a kind of icterus without entire loss of consciousness, but with stupor and half consciousness, immobility almost complete and mutism complete. There was in the heart a grating systolic soufle, having its maximum of intensity at the apex. At first serious doubt existed regarding two hypotheses, as to whether it might be cerebral rheumatism or trouble caused by emboli; but the result of the further development of occurrences confirmed the second hypothesis, and the case soon terminated fatally. At the autopsy large vegetative growths were found on both valves and emboli completely obstructing the left sytirian artery and a number of other deeply seated arteries of the corresponding cerebral lobe. In these vegetations as well as in the emboli the bacteriological examination revealed the existence of a bacillus similar to those found in rheumatism that have been studied by MM. Achalme and Thiroloix.

LUXATIONS OF THE HIP. M. Berger read at a meeting of the Académie de Médicine ("Gazette Hebdomadaire," Dec. 2, 1900) a report of five cases of sudden luxation of the hip shortly before a severe attack of coxalgia.

"These sudden luxations," said M. Berger, adopting the conclusions of M. Kermisson, "when present have all the signs of traumatic luxations.

"As to their etiology, the brief time that intervenes between the appearance of coxalgia and the luxation precludes the possibility of attributing it to the destruction of the rim of the cotyloid cavity,

the absorption of the head of the bone and even an extensive destruction of the capsule. It becomes necessary then to admit the contraction of the muscles, aided by an accumulation of liquid in the joint, causing the head to leave the cavity.

"The prognosis in such cases is good, since in all such the reduction has been followed by cure. The abscesses that have occurred may be placed in the well-known category of abscesses not uncommon in the process of healing."

ANTICANCEROUS SERUM.—The discussion on the subject of the anticancerous serum of Dr. Wlaeff was continued ("Gazette Hebdomadaire, Dec. 2, 1900) by MM. Le Dentu, Berger and Lucas Championnieré. "The parasitic origin of cancer is far from being positively demonstrated and therefore the consequences that follow from it, so far as applied to this treatment, are doubtful," said M. Le Dentu; "but, however doubtful they may be, favorable results have been obtained; still, I do not think that they differ essentially from those furnished by the inoculation with the cultures of the streptococcus of erysipelas—pure or combined—with others of injections of the serum of animals inoculated with the fluid, or even with the pulp of cancerous tumors or of inoculation of the yeast of beer.

"Some ameliorations have been obtained in epithelial tumors and so far there has been no unfavorable result following such a use of this new serum.

"In the cases in which it has not done any good it certainly has done no harm.

"In summing up," said M. Berger, "however precarious the results so far obtained with the serum of Wlaeff may have been, I think there is in it, considering the poverty of our resources against cancers that cannot be operated on, a means of experimenting and even of treatment which should not be hastily thrown aside."

TOXICITY OF THE SWEAT OF EPILEPTICS.—MM. Mairet and Ardin-Deltheil have collected the sweat of epileptics between attacks, at the time of the attacks and soon after the attacks. The sweat between the attacks, like that of a healthy man, is not toxic. The sweat taken during the attacks contains the parasite which causes the death of animals; the death was immediate in one case, at a longer interval in two cases in which the sweat had been collected some hours after the attack.

NEUROPATHIC HEMORRHAGES. M. Lancereaux presented to the Académie de Médecine ("Progrès Médical," Dec. 8, 1900) a very interesting communication on neuropathic hemorrhages of the digestive organs.

They are found at different points of the organ; the mouth, stomach and intestines. They are induced very often by some strong emotion.

"It is not always easy," said M. Lancereaux, "to separate the neuropathic hemorrhages of the digestive organs from those that depend on some material lesion, ulcer, cancer, etc. These latter, however, are distinguished by a sudden access and return at the expiration of a short time, while the former are always induced by prodromata; they reappear after a lapse of time, often quite long, and do not admit of any material cause.

"The neuropathic enterorrhagies, like gastrorrhagies, rarely cause death; they are serious only in consequence of their repetition; the former are less serious in the large intestines than in the small.

"Both present therapeutic indications very similar: opiates, ice on the abdomen, injections of ergotin. If the blood comes from the stomach a dose with xx drops of perchloride of iron is indicated. However, the nature of the affection being considered, the use of quinine should not be neglected, especially when the hemorrhage continues under an intermittent form for several days. These local discharges of blood may be in some respects useful, especially when the hemorrhages take the place of hemorrhoids that have ceased to bleed. And finally it is important to modify the nervous constitution by the use of hydropathic treatment, with a suitable regimen and moderate exercise.

ADVANTAGES OF THE SPRAY IN PSEUDO-MEMBRANES OF THE PHARYNX.—D. C. Brown, M. D. ("New England Medical Monthly"), advocates the use of spray on the exposed surface of the pseudo-membrane in diphtheria—the diphtheria bacilli mass in abundance, *reproducing* themselves and generating toxins. While penetrating the membrane to its middle layers, the mixed or single form of pyogenic cocci are found, or may even enter the organized tissues themselves. It is, therefore, with spray, better than any other means, that we may attack the enemy in the rear, destroy his supplies and prevent the recruits from joining the line of battle. Irrigation fails to give the penetrating power necessary to get to the middle layer of the pseudo-membrane. It and gargles are

good for cleansing, but the young cannot gargle. I avoid spraying the uvula unless covered with a pseudo-membrane, and in fact avoid any healthy membrane with the direct force of the spray, for I aim to get force enough to see the tissues splay out with the spray.

Personally, I have two favorite solutions which I rely upon to be used as sprays in accordance with the individual case. The first is hydrozone, and I direct that the nurse put two teaspoonfuls with three to eight teaspoonfuls of water and use at first every half hour or hour. I use this especially in all denser membranes, that the hydrozone may break up and disinfect the middle layers of the pseudo-membrane. It makes a way for other antiseptics which may be subsequently used. The second spray is a solution of formaldehyde, directed to be used as follows:

℞	Sol. formaldehyde, ¼ %, 30-60.		℥ j-℥ ij
	Kal. chlor.,	8.	ʒ ij
	Acid. boric,	4.	ʒ j
	Glycerine,	15	℥ ss
	Aq., ad	120	℥ iv

M. Sig. Use in spray after hydrozone.

This I make the standby and vary the strength according to the conditions, and continue with it when the pseudo-membrane has become so thin that I do not care to continue with the hydrozone. Remembering the middle layers of the pseudo-membrane and the depths of the crypts, I shoot hard and quick and resort to the spray early, and very often do not have to use the antitoxin.

Loss of Hair. Jackson ("Edinboro Medical Journal" for October—"Therapeutic Gazette," November, 1900) states that if we can cure dandruff the loss of hair is checked unless the scalp has been too much damaged by the atrophic process to which it gives rise. He has had positive results in checking the fall of hair and increasing its amount by using precipitated sulphur, ten per cent., in a good cold cream with or without either salicylic acid, three to five per cent., or extract of jaborandi, one drachm to the ounce. The ointment proposed by Bronson, composed of ammoniated mercury 20 grains, calomel 40 grains, in 1 ounce of vaseline, has also done good service in some cases. Sometimes resorcin in solution and in increasing strength has proved helpful. On the other hand, naphthol and cantharides have been complete failures; in many

cases none of these has aided. The dandruff, being parasitic in origin, is apt to relapse, hence the remedies are to be resumed should it reappear. For stimulating the growth of hair the best remedy is massage, but this must not be resorted to until the dandruff has disappeared. The services of a skilled professional give the best results, but good may be done by the patient himself pinching up the scalp between the ends of the extended fingers of both hands for five minutes twice a day.

EFFECTS OF INCANDESCENT LIGHT ON THE EYES.—Consul Hughes, of Coburg, under date of October 15, 1900, informs the Department of State that the medical faculty of the University of Heidelberg has made a very interesting report on the effect of incandescent light (gas or electrical) on the eyes. After having carefully weighed all the pros and cons of the question, the verdict is that the incandescent light is not harmful. For lighting large halls or places of entertainment, electricity is especially recommended from hygienic points of view.

"COCAINE-SNIFFING."

One of the most pathetic instances of the negro's inability to resist the vices of civilization, says the "Atlanta Journal-Record of Medicine," is offered by his ever-increasing addiction to the cocaine habit. In this city cocaine as a means of intoxication is actually replacing alcohol among the colored "boulevardiers" and their female associates of Decatur street. Parties and clubs are organized for bacchanalian indulgence in the drug, in which often as many as a hundred persons participate. A room corresponding to the "gin-mill" or the opium joint is supplied to his patrons by the seller of the drug, where they take it without fear of molestation or interruption. It is said there are two such places on Decatur street operated in connection with drug stores, and that the proprietors are getting rich in the awful traffic. Ten cents buys four grains of cocaine and permission to use the room. The drug is sniffed up the nose, and the habitué lolls at ease and gives himself over unreservedly to its influence. Young men, young women and boys constitute the bulk of the victims of an enslavement far exceeding that which led to the bloodiest war of modern times, for it not only brings the body under its grim subjection, but warps and perverts the mental and moral nature almost beyond the hope of redemption. Could a more ideal victim be found than the negro, "half devil and half child," and one with whom the cocaine habit could play more rapid, more complete and utter havoc?

On Saturday nights, and then on until the week's earnings are expended, these resorts number their patrons by the hundreds, some of them novices, others hollow-eyed, trembling wrecks, upon whom the drug has obtained a hold that cannot be broken. The latter, in the vernacular, are known as cocaine "sniffers," and it is needless to say are in the majority. It is said that these facts are well known to the police, but, as there is a superficial form of observance of the legal restrictions upon the sale of poisons, they are powerless to suppress the traffic. It is inconceivable that any one could be so sunken in moral debasement as not only to pander to a vicious, perverted and, in the highest degree destructive taste, but could lend his aid in leading the uninitiated and uninformed into the path that kills. Yet all this can be charged to those purveyors of the drug who are willing to accept any flimsy pretext to supply their customers with that which their warped nature craves.

Already the negro problem is the incubus that the South must unwillingly bear, and it is not short of criminal to complicate it by artificially disturbing a nature which even normally is with difficulty restrained. Nothing but the most severe and drastic measures are competent to correct this growing and threatening evil, and it is hoped that once the attention of the proper authorities is directed to it, the monstrous offense will be punished by suppression.

KNOCK-OUT DROPS.

"In at least fifty stores in this town," says a writer in the New York "Sun," "a stranger can buy chloral hydrate without a physician's prescription. Some of the druggists know what use it is to be put to at the time they sell it, but they charge $2 to $3 for an ounce bottle of the mixture, and so long as they get a good price for it they ask no questions. There are two drug stores in Manhattan that are thriving on the sale of chloral hydrate. Their customers are thieves who make a practice of drugging and robbing men who come to New York to see the town."

THE COST OF PUBLIC BATHS.

The "Medical Record" cites as a striking example of the extravagance prevailing in the conduct of our city government the offer of a charitable organization to conduct the new public baths in Rivington street for less than half of the sum asked for by the municipal authorities. The Commissioner of Charities asked for an appropriation of $52,000 to run the baths for a year; the Board

of Estimate allowed him $35,000, and now the Association for Improving the Condition of the Poor offers to do the work for $17,500 and to furnish soap and towels, articles which the Commissioner did not seem to regard as necessary accessories.

EDITOR'S TABLE.

SANITARIAN, FEBRUARY, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

The grippe is reported to be more prevalent throughout the city than it has ever been before—indeed, according to newspaper reports, throughout the country. In the Borough of Manhattan alone, during the week ending January 19th, *ninety-four* deaths were reported from it, and in Brooklyn *thirty-eight.* But it is just now the fashion to attribute all sorts of diseases to it with apparently little care to discriminate. Nevertheless, it is a most insidious disease and particularly dangerous to the weakly. Of all predisposing causes, too warm and insufficiently ventilated bedrooms are the most, and too much coddling for fear of it—wrapping to excess and causing perspiration, on going out—adds to the susceptibility. The best thing to do on being attacked, the "Medical Record" wisely advises, is to go to bed, send for a physician and obey his instructions. For, "While influenza is a self-limited disease, and mild and uncomplicated cases may safely be left to the resources of Nature, it is unfortunately true that the disease has to a greater extent than any other the faculty of attacking some weak spot in a person's armor; hence complications are numerous, and in virtue of the complications and sequelæ, often prove disastrous. The most common complications and sequelæ, it is superfluous to remark, are respiratory affections, of which pneumonia is the most often fatal."

DANGER IN THIS MEAT.

(From New York "Sun," January 8th.) Albany, January 7.—Twenty-five carloads of tuberculous and cancerous cattle have passed through or have been shipped from West Albany to New York City within the past ten days. How many head of diseased cattle have found their way into the New York City market during the recent fall months the State authorities do not pretend to estimate. Of the recent shipments a description of one carload

will suffice. The first animal to be led upon a cattle car at West Albany for shipment to New York was an ox which in weight should have carried nearly a ton of flesh. Its hide was scraggy and the beast was in such a weakened condition that in order to prevent falling while standing had to brace his hind legs. Then followed three cows with cancerous growth. Next were three more cattle suffering with hernia, while another came bearing unmistakable signs of tuberculosis. The other cattle loaded upon this car bore similar marks of ill health.

A special report upon this carload was made to the State Agricultural Department by one of its inspectors, who has been operating at the West Albany Cattle Yards for several weeks past. This inspection was instituted to discover violations of the bob veal, and the disclosures which resulted otherwise were of a startling nature. It is during the fall that the farmers weed out undesirable cattle, and agents scour the country for such animals, offering nominal prices. The carload mentioned is a sample of what has been going into New York City for some weeks to be made into bologna sausage, though the "best" cuts find a resting place upon the butcher's block.

The State Board of Health for the past ten years has had charge of the investigation of the spread of tuberculosis among the cattle of the State. During that time about $55,000 has been expended, some of which went to pay awards for the killing of tuberculous cattle and horses suffering with glanders. Consumption causes about 13,000 deaths a year among the people of the State, and the State authorities are not surprised in view of the tuberculous cattle that are shipped.

A PRACTICAL LESSON FOR ANTI-VACCINISTS.

A mail carrier was discovered three weeks ago in the Melrose Lodging House on upper Third avenue, New York, to be suffering from smallpox. He was at once removed to North Brother Island, and the Health Board officials proceeded energetically to vaccinate everybody in the building. Most of those who had been so closely exposed to infection promptly and gladly submitted to the beneficent rite. A few, dreading a temporary inconvenience more than they feared the possibility of smallpox, objected to the operation, but they were soon persuaded into acquiescence. Only two occupants of the house, Patrick Joyce and Edward Muller, were at once ignorant and obstinate enough to resist all argument, and, as absolute compulsion could not be used, they had to be left unpro-

tected. Ten days thereafter Muller developed the disease from which his fellow-lodger had suffered, and the next day Joyce was attacked by it. Of the many others who were equally endangered, not one has yet shown the first signs of infection. If this episode is not a sufficient answer to the anti-vaccinationists, they must be left in their darkness. There is, of course, a mathematical possibility that the selection by the disease of the two men who had not been vaccinated, and its avoidance of all those who had been, merely formed a curious coincidence, but the chance that this is so is too small for ordinary human consideration. As mortal certainties go, it is certain that Joyce and Muller would not be in the smallpox hospital to-day if they had availed themselves of the precaution to which their companions more or less willingly submitted. It is also certain that the absence of a compulsory vaccination law is a source of public peril. These men did more than voluntarily accept a personal risk. They put others as well as themselves in danger.

SCHOOL OF HEALTH.

Articles incorporating a School of Health, with headquarters in the city of New York, have been filed with the Secretary of State. It is proposed to establish a school for mental and physical culture, for instruction in sanitary laws, in the chemistry of cooking, in food values and their adulterations, in the laws of heredity and of life and health generally, and in the evils of the use of tobacco, alcohol and morphine upon the human system. The directors for the first year are Dr. Egbert Guernsey, John J. Plunkett, Dr. Ella A. Jennings and Sylvester M. Weimer, of New York City; George Donaldson, of Cliff Side, N. J., and Mrs. E. C. Hazard, of Shrewsbury, N. J.

THE STATE CONSUMPTION HOSPITAL SITE.

The State Forest Preserve Board and the State Board of Health have approved the site recommended by the trustees of the State Hospital for the Treatment of Incipient Pulmonary Tuberculosis.

The site, which is located at Raybrook, three miles southeast of Saranac Village, contains 521 acres and will cost the State $7,500, which is about $3,500 less than the price asked for last week. The site selected is on the side of a hill, sloping to the southeast, admirably sheltered from the prevailing winter winds and facing the picturesque Raybrook Mountain, a mile away. A little to the right of the proposed site is the group of the highest Adirondack Mountains. The top of the hill, which commands a beautiful view to the

north and west, is a plateau which would be admirably adapted for tents during the summer in which the male inmates of the hospital could live.

Most of the property immediately adjoining the proposed site is State land. There is an abundant water supply. The place is accessible by means of both the New York Central and Chateaugay railroads, the latter being a Delaware and Hudson branch.

FOR PREVENTION OF TUBERCULOSIS IN GERMANY.

U. S. Consul Monaghan, at Chemnitz, reports to the Department of State that the German Department of the Interior has issued a set of instructions conveying compulsory precautions to be taken against the spread of tuberculosis in the empire.

The instructions consist of seven articles, providing that doctors under all circumstances where their patients have lung or larynx tuberculosis must give written notice to the police as soon as the case in question has been diagnosed; that immediately after the death of a person from this form of disease the deceased's room and effects must be thoroughly disinfected; that professional women who lay out the dead must report at once in writing to the police authorities whether the disease was of the lungs or larynx, and that keepers of hotels, lodging houses, asylums or other public institutions shall report immediately the appearance of the disease in the establishment under their control.

Non-compliance with these regulations is subject to a fine of $35.70 or six weeks' imprisonment.

THE TYPHOID FEVER IN NEWPORT.

The report of C. A. Winslow, of Boston, to the Chairman of the Board of Aldermen on the recent prevalence of typhoid fever in Newport, shows that for a series of years typhoid fever has been more or less prevalent there. From 1895 to '98 there was an average of 33.3, with 32 deaths. In 1899, however, as tabulated, the number of cases reported to the Board of Health rose from an average of 29 for the four years preceding to the excessive number of 52. In 1900 the number of reported cases reached 110 by the 20th of November and the number of deaths from typhoid fever up to that date was 17. Of the 110 reported cases in the year, 91 are of a date later than September 1. Seventeen deaths to the population of 23,034, given to the city of Newport by the Twelfth Census, make a death rate of 73.8 per 100,000, with no allowance for the six weeks of the year still remaining. It is therefore evident

that the typhoid fever death rate of Newport for 1900 will be so largely in excess of those recorded in other places and for previous years as to indicate the existence of a serious epidemic. The city water supply "though highly colored during the late summer and impregnated with a strongly marked mouldy or grassy odor," on a single analysis showed no evidence of pollution; and this was verified by an examination of the premises. The next object of suspicion was the Bridge street well. But among the persons who used water from this well there were but three cases, and these were traced to secondary infection. There were 38 cases between September 16 and October 23, occurring in a limited district and among a population using a shallow well with walls of uncemented stones, about 10 feet deep and 8 feet in diameter. The surface of the water in the well was about two feet below the ground and its covering consisted simply of planking, upon which those who used it stood while operating the wooden pump. The watershed sloping gently to the east includes some 20 privy vaults within 400 feet, the nearest being that belonging to 26 Bridge street, 60 feet south, and that belonging to 28 Bridge street, only 25 feet south. The ground water, as noted above, is so near the surface in this region that material from the vaults could pass laterally through the filth-laden and water-soaked soil without any downward filtration whatever. If typhoid germs are ever carried through the earth they might be carried from the dejecta of a typhoid patient in one of the neighboring vaults to a well so circumstanced.

And it is important to observe that such specific vault pollution was not wanting. August 31 there was a case with a vault about 200 feet northeast of the well, and September 3 there was a case with a vault 300 feet southeast. It is easy to conceive, especially as I found no evidence that the excreta had been disinfected in these early cases, that a slight amount of infection may have found its way from one of these sources to the well and caused the first few cases. One of these early cases, already sick with what proved later to be typhoid fever, left 28 Bridge street September 15. The vault in which this excreta were received was only 25 feet from the well; and it is still easier to conceive that infection passed through this short distance, and caused the later outbreak which culminated with 12 cases in the week of October 12. The surroundings of the well and its relations to the sources of pollution mentioned above are shown on a plan accompanying the description.

Among the 110 cases investigated there were 31 milkmen, the greatest number of families affected on any one route was five, and these cases did not occur at the same time. Two sporadic cases may, however, have been due to this cause. Case No. 30 was a milkman supplying from 20 to 30 families in a district east of Thames street. He cared for the entire business in person, as well as for the delivery of the product. September 15 he took to his bed with typhoid fever and the business was turned over to another person, not connected with the household. October 2 and 6, respectively, two of his customers, cases 58 and 68, fell ill, the former case terminating fatally. These are the only cases in which any connection can be made out with the milk supply, and these were not in the district where the main epidemic was located. It is interesting, however, to note that these two cases form perhaps a miniature epidemic, such as might often occur without detection.

A large proportion of the typhoid patients had purchased ice cream from a shop kept by a dealer on Bridge street, and I was inclined at first to consider this fact significant. Of the 31 cases, however, among the customers of this shop between September 1 and November 15, 18 were also users of the Bridge street well water, and the 13 remaining were so widely scattered in time as to rule out the possibility of a common source of infection. An investigation of the shop mentioned and of its source of supply failed to reveal any apparent opportunity for contamination, and as this dealer supplied many other persons who remained in good health, ice cream may be excluded as a cause of the disease.

A majority of the householders stricken by the epidemic did not use ice. Those who did so obtained it from one or two companies, both of which have delivered during the summer some artificial ice supplemented by natural ice obtained from the Boston Ice Company. The cases among the ice users did not occur in greater number at any special period so as to warrant any suspicion of this supply as a cause of the epidemic, and hundreds of other persons all over the city used ice from the same source without ill effects.

The report concludes that the excessive number of cases of typhoid fever in Newport during the year 1900 were due in part to the contamination of a well as a source of water supply by a large district; and in greater degree to secondary infection, made possible by filthy and unsanitary conditions. The well, in accordance with his recommendation, was promptly closed on the 15th of October, and this action was immediately followed by a marked reduction in the number of new cases. "The secondary cases,

however," he remarks, "and particularly the return cases in the families where the infective material found a lodgment, still continue and will so continue until such infective material is destroyed by thorough disinfection. I can only repeat in this connection the opinion I have already expressed in two communications, addressed to you. * * *

"In conclusion I wish to call attention once more to the fact that in 1898 there were 22 cases of typhoid fever in Newport (exclusive of the 12 imported army cases), in 1899 there were 52 cases, and in 1900 there have been already over 100. Whether or not there shall be 200 cases in 1901, in my opinion, depends upon the carrying out of the proper disinfective and sanitary measures such as I have indicated."

"CHARLES EDWARD AMORY WINSLOW."

It is hardly conceivable of the people of Newport, after such a display of incompetency by the Board of Aldermen of that city, as embodied in this report, that they can much longer submit to a city government that makes no provision for the protection of the public health. It is clearly evident that this epidemic might have been prevented by an intelligent appreciation by the city officials of the common means of the propagation of typhoid fever and of the need of promptly tracing the source of the first cases and destroying the causes. By their ignorance and neglect in this respect, much suffering ensued, many lives were sacrificed and expense was entailed upon the city sufficient to have paid the cost of an efficient Board of Health for at least ten years.

NEGLECTING THE WARNINGS OF THE WEATHER BUREAU MAY VOID THE POLICY.

The chief of the weather bureau has called public attention to a recent decision of the United States Circuit Court of Appeals, at Richmond, Va., involving the responsibility of a vessel master for damages from rain to a cargo of rice discharged on an unsheltered wharf at Charlestown, where the bureau had predicted rain. The court substantially held that when such warnings are brought to the attention of vessel masters it is their duty to take cognizance of them. If the warning is of a character that would lead a reasonably prudent man to protect the property in his charge against the threatened peril, its disregard is an act of negligence.

The important bearing of this decision on marine and inland underwriting is obvious. It is the first time, we believe, that the character of the weather service has been judicially passed on.

The great lakes, as is well known, are the favorite highways for the storms which pass across the country. They are rarely swept by a gale which is not predicted from six to twelve hours, and often twenty-four hours in advance. It would be a fair inference, from the decision, that a vessel master who leaves a port without inquiring or heeding the warning, does so at his peril. It becomes an open question whether any damage that results is chargeable to perils of the sea or to his own neglect.

Mere contributory negligence will not, as a rule, relieve a policy from liability, but when neglect amounts to a wholly unnecessary exposure of the vessel, and is gross in its character, this is negligence within the meaning of the policy. Exemption from liability in case of want of ordinary care, or of negligence, is frequently an express stipulation of the marine policy. The practice of consulting the weather service by shipmasters, before sailing, has now become so well established that its omission, under threatening conditions, is in itself presumptive of negligence. The fact that the vessel sailed while storm warnings were flying should call for justification by the insured.

There are vessels like our great ocean liners, to which this principle would not apply. They are built to sail, regardless of conditions. But the thousands of sailing craft that yearly escape disaster by heeding the weather warnings are the strongest argument for the negligence of the shipmaster who ignores them.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

NEW YORK. The Secretary's bulletin for November, 1900, population 7,110,000: Total deaths, 8,715; death rate, 15.0; deaths under five years, 2,178; percentage of deaths under five to total deaths, 25.0; total deaths from zymotic diseases, 960; z. d. per 1,000, from all causes, 110; cerebro-spinal meningitis, 38; typhoid fever, 233; malarial diseases, 26; smallpox, 1; scarlatina, 33; measles, 32; erysipelas, 12; whooping-cough, 50; croup and diphtheria, 304; diarrhœal diseases, 231; acute respiratory diseases, 1,172; consumption, 1,011; puerperal diseases, 66; diseases of the digestive system not diarrhœal, 694; diseases of urinary system, 758; diseases of the circulatory system, 764; diseases of the nervous system, 955; cancer, 390; accidents and violence, 412; old age, 401; unclassified, 1,132.

City of New York, 3,444,675: Total deaths, 4,784; death rate, 17; deaths under five years, 1,367; from cerebro-spinal meningitis, 26; typhoid fever, 93; malarial diseases, 18; scarlet fever,

10; measles, 5; erysipelas, 7; whooping-cough, 21; croup and diphtheria, 286; diarrhœal diseases, 97; acute lung diseases, 818; consumption, 823; cancer, 197.

Borough of Manhattan, 1,851,887: Total deaths, 2,643; death rate, 17.2; deaths under five years, 766; from cerebro-spinal meningitis, 18; typhoid fever, 41; malarial diseases, 10; scarlet fever, 5; measles, 1; erysipelas, 4; whooping-cough, 12; croup and diphtheria, 83; diarrhœal diseases, 61; acute lung diseases, 457; consumption, 317; cancer, 113.

Borough of the Bronx, 202,092: Total deaths, 294; death rate, 17.6; deaths under five years, 81; from cerebro-spinal meningitis, 3; typhoid fever, 1; malarial diseases, 1; scarlet fever, 3; measles, 1; whooping-cough, 2; croup and diphtheria, 20; diarrhœal diseases, 2; acute lung diseases, 32; consumption, 69; cancer, 9.

Borough of Brooklyn, 1,169,796: Total deaths, 1,588; death rate, 16.5; deaths under five years, 482; from cerebro-spinal meningitis, 5; typhoid fever, 47; malarial diseases, 2; scarlet fever, 1; measles, 3; erysipelas, 3; whooping-cough, 3; croup and diphtheria, 70; diarrhœal diseases, 32; acute lung diseases, 292; consumption, 196; cancer, 70.

For the year 1900 the registrar reports the number of deaths in Brooklyn as 23 475; the number of births, 22,572. In 1899 the number of deaths was 21,683, while only 21,203 babies were born in the borough during the same year. The figures in 1898 were: Deaths, 21,586, and births, 21,395.

It thus appears that more Brooklynites are going out of the world than are coming into it, but Dr. Byrne, the registrar, declares that such is not the case. The births in Brooklyn quite invariably exceed the deaths in number, he says, although the records of the Health Department do not show this to be so. The failure of the department records to present this fact is due to the negligence of physicians in reporting the same to the Health Department. Many births occur in Brooklyn each year which are never reported, although the law requires that report be made by physicians and provides a penalty for failure to do the same.

Borough of Queens, 153,734: Total deaths, 186; death rate, 14.7; deaths under five years, 62; from typhoid fever, 2; malarial diseases, 5; scarlet fever, 1; croup and diphtheria, 11; diarrhœal diseases, 2; acute lung diseases, 27; consumption, 30; cancer, 3.

Borough of Richmond, 67,166: Total deaths, 73; death rate, 13.0;

deaths under five years, 16; typhoid fever, 2; croup and diphtheria, 2; acute lung diseases, 10; consumption, 11; cancer, 2.

Smallpox reported for the nine weeks ending January 5, 1901, 140, with 4 deaths. Vaccination proceeds with avidity; the number of cases of smallpox reported is decreasing and there is no fear of an epidemic. Nevertheless, at a meeting of the State Board at Albany, January 3d, a warning was issued against lax methods in dealing with the smallpox outbreak in various parts of the State. In reviewing the situation it says:

"As long as smallpox prevails in the surrounding States, in not a few of which, near and remote, it has existed extensively for a long time, the State of New York will be exposed to the disease. During the last three years we have had considerable experience with it, commencing with an importation in 1898 by a travelling theatrical troupe, among whose members the disease existed undiscovered until twenty localities in the western part of the State had been visited with public parades and performances, and as a result smallpox was distributed in fourteen counties, not less than 320 persons took the disease, and a year passed before it ceased to exist. During this current year smallpox has been brought to seventeen places from outside, from near or remote Western or Southern States, by direct importation to the single locality instead of by peripatetic individuals, and having been in every case recognized promptly has not been permitted to spread; in thirteen places only the single imported case occurred, in two there were three or four cases, and in one there were fifteen cases, all among negro brickyard laborers, who brought it from the South, and to whom it was limited without spread to the general community.

"The utility of vaccination is beyond question. The security of this State, in contrast with that of uncivilized countries at the present day, is wholly due to the protection it has afforded. The operation, rightly done, is so simple and safe, and vaccinia ordinarily so trifling, as compared with variola, that it is criminal to neglect it for the community and each individual. Health and educational boards ought to use all the authority given them to secure it to every one."

Albany, 100,000: Total deaths, 135; death rate, 16.5; deaths under five years, 25; from typhoid fever, 4; scarlet fever, 1; croup and diphtheria, 4; acute lung diseases, 15; consumption, 22; cancer, 10.

The report for the year 1900 is of special interest with reference to typhoid fever and its prevention by the recently introduced sand

filtration of the water supply. The number of cases of typhoid fever for the year was 126. In 1898 there were 483 cases reported; in 1898 there were 442 cases reported for the first ten months; in 1899 there were 496 cases reported for the first ten months, as against the first ten months of 1900 of 126 cases. During the month of July there were 31 cases reported, August 20 cases, September 25 cases, October 23 cases, first twelve days of November, 1899, 10 cases. On this day the filtered water was turned on, after which there was a marked diminution. During December there were reported 9 cases; January, 1900, 7 cases; February, 9; March, 13; April, 7; May, 8; June, 4; July, 8; August, 19; September, 37; October, 19.

The death rate, in 1891, was 24.32; 1892, 26.17; 1893, 21.65; 1894, 22.12; 1895, 23.89; 1896, 21.45; 1897, 20.57; 1898, 22.41; 1899, 23.18, and for the first 10 months of 1899, 19.68, and for the first 10 months of 1900 the death rate was 17.55.

Syracuse, 108,374: Total deaths, 96; death rate, 10.7; deaths under five years, 15; from typhoid fever, 3; croup and diphtheria, 3; acute lung diseases, 10; consumption, 11; cancer, 5.

Rochester, 162,436: Total deaths, 143; death rate, 10.7; deaths under five years, 24; typhoid fever, 5; croup and diphtheria, 11; acute lung diseases, 13; consumption, 22; cancer, 5.

Rabies had been reported epidemic in Rochester by the Health Officer. He describes the kinds of dogs that should be looked upon as suspicious, traces the development of the disease and recommends that animals found suffering from rabies be captured, if possible, so that they may be observed before death comes. He urges all persons who see suspicious-looking animals upon the streets to communicate with the Health Department at once. "At present," he says, "all dogs must be viewed with suspicion."

Buffalo, 352,219: Total deaths, 341; death rate, 11.6; deaths under five years, 105; from typhoid fever, 5; scarlet fever, 5; croup and diphtheria, 7; acute lung diseases, 43; consumption, 32; cancer, 13.

ALABAMA.—The public health of the State, except for smallpox, is felicitously dwelt upon by the Medical and Sanitary Dissertations and Reports, comprehended in the volume of "Transactions of the Medical Association of Alabama, 1900." To the efficiency of the quarantine in the harbor of Mobile is attributed the complete exclusion of yellow fever from Alabama during the past two summers. For the arrest of the, now for several years, per-

sistence of smallpox, the association is urged to exercise its efforts to secure the enactment of a law of compulsory vaccination. Earnest effort is urged also for the enlargement and more rigid enforcement of laws and regulations requiring reports of all infectious diseases as a necessary prelude to a knowledge of the causes and their prevention.

CALIFORNIA. The latest case of plague discovered in San Francisco, early in December, was given a significance not met with in any previous case. This case was discovered and reported to the San Francisco Board of Health by the Governor's own inspector, Dr. D. A. Hodghead, who went so far as to say that it was "suspicious and requiring investigation."

The patient died December 7th, thirty-four days after the last known death, that of the white nurse, Anne Roedde. The man had been ill six days and was reported before death, adding to the number of live cases which the anti-plague crowd predicted would never be found. There have been three cases diagnosed before death as plague. An alarming feature of this case was the fact that it was the fourth death from plague in the same block, indicating a centre of infection which, in spite of precautions covering considerable period of time, had not been wiped out.

Los Angeles, 102,479: Total deaths in December, 161; death rate, 18.85; deaths under five years, 20; from specific infectious diseases, 15; acute lung diseases, 11; consumption, 34.

CONNECTICUT. The State Board of Health Bulletin reports for November: Total deaths, 1,097, in 165 towns having an aggregate population of 908,355.

The death rate was 14.4 for the large towns, for the small towns 14.5, and for the whole State 14.4. The deaths reported from infectious diseases were 131, being 11.8 per cent. of the total mortality. Of typhoid fever there were 121 cases reported in 50 towns.

New Haven, January 9, 1901.—The Board of Health has promulgated the following ordinance:

"That spitting upon the floors of public conveyances or upon the premises of public buildings, theatres, opera houses, halls, and the like, except in proper receptacles provided for said purpose, is hereby prohibited.

"It shall be the duty of owners, agents, or persons having charge of public conveyances, buildings, theatres, opera houses, halls, and the like, to display in a conspicuous place and manner proper signs calling attention to this regulation. Said signs to be duly ap-

proved by the said Board of Health. Every person wilfully or carelessly violating this regulation, or refusing to display said signs shall forfeit and pay a penalty of not less than $5 or more than $50 for every violation."

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports, January 9, 1901: The deaths in the District decreased from 118 in the week ended December 29th to 93 in the past week, giving a death rate of 17.00 per thousand as compared with 22.01 during the week previous. This improvement in the health conditions amounted to a fraction over 20 per cent. The deaths from consumption fell from 14 to 10; from apoplexy, from 6 to 3; from bronchitis, from 7 to 3; from typhoid fever, from 4 to 1. There were 2 fatal cases of diphtheria, 1 of whooping-cough, 1 of cerebro-spinal meningitis and 3 of epidemic influenza (grippe). At the close of last week's report there were 34 cases of diphtheria in quarantine. During the week 17 new cases developed and 18 were discharged, leaving 13 cases in isolation in 27 premises. Of scarlet fever there were 41 cases in quarantine at the close of last report. During the week 11 new cases were reported and 8 were discharged, leaving 44 cases with warning cards in 33 premises. Of smallpox there were 11 cases in hospital at the close of last report. During the week 2 new cases developed and 4 were discharged, leaving 9 cases under treatment in hospital.

FLORIDA.—Jacksonville ("Times"), December 31, 1900.—Jacksonville has a sanatorium, which is an institution that the city has long needed.

For some time past Drs. R. H. Dean, J. N. D. Cloud and Frank H. Caldwell have been making arrangements to establish in this city a sanatorium which would be a credit to the community. They purchased the handsome Toomer house, at No. 307 Cedar street, and a few days ago handsomely and appropriately furnished it throughout, and to-day it was thrown open to the public.

A "Metropolis" reporter to-day inspected the new sanatorium, and found everything scrupulously clean, and the arrangements perfect.

Two trained white nurses have been employed, and these young women are reported by the physicians to be most efficient. The location is a most excellent one, and while central, is very quiet.

The furniture, linoleums, mattings, carpets and all the instruments are new, and the building has been fitted up at an enormous expense. Every system of electricity known in medical science is used, and the machinery is all up to date. The sanatorium is pro-

vided with influence machines, alternators, inductions coils, cautery, X-ray machines and static electricity. Oxygen cylinders are in the various rooms and are at the disposal of any physician who may be in need of the same.

GEORGIA.—Atlanta (January 5, 1901) has awakened to the necessity of school sanitation. The abominable Smead system, used for many years in the public schools of the city as a means of warming and ventilation, has been cast out. The Boards of Health and Education are in coöperation for a thorough reform. Dr. B. W. Bizzell, chairman of the Committee on Infectious Diseases, brought the matter up in a quiet way by reading a letter from Hon. Hoke Smith, president of the Board of Education, in which he asked for time in the matter, believing that Council would readily appropriate a sufficient amount to meet the necessary expenses. Dr. Bizzell stated in behalf of the Board of Education, the teachers and the pupils, that every school which the committee had visited was as cleanly as could be expected under the present system of sanitation. "Here is where the rub comes in," he said; "the fault is the system."

Dr. Bizzell made a statement to the effect that garbage was being removed from the Sixth Ward and placed on a vacant lot near Calhoun Street School, advising that this be stopped.

Chief George M. Hope, of the Sanitary Department, said this matter had reached his ears only Friday morning, and that he had immediately ordered it stopped.

It is up to the Board of Education and the City Council now to look after the three defective schools, and it is likely that the necessary remodelling will be done without more delay.

ILLINOIS.—Chicago, 1,698,575. Report for October: Total deaths, 1,802; death rate, 14.59; deaths under five years, 683; from typhoid fever, 38; scarlet fever, 13; whooping-cough, 25; diphtheria, 79; acute respiratory diseases, 210; consumption, 104; other tubercular diseases, 28; cancer, 81.

A sanitary commission has been appointed to consider vexed questions concerning the Chicago River as a commercial highway and a sanitary agent and to report their conclusions to the Board of Trustees by March 1st.

INDIANA.—The State Board of Health reports for November, 1900: Total number of deaths, 2,854. For the corresponding month of last year 2,510 were reported, an excess for this of 344. A decrease appears, however, for November as compared with the preceding month of this year, for there were reported for October

2,933 deaths, a difference of 79. The annual death rate for the whole State, as based upon the month's returns and the United States census of this year, is 13.8. The deaths under one year were 476, and one to five, inclusive, 269; making a total of 755 infantile deaths, which is 26.8 per cent. of the whole number.

IOWA.—Health bulletin for November, 1900. Outbreaks of infectious diseases reported at the several places named during the month:

Diphtheria: Douglas township, Clay county; Hartley; Woodland; Lake Prairie township, Marion county; Sabula; Williamsburg; Irwin; Squaw township, Warren county; Troy township, Monroe county; Floyd township, Dickinson county; Belmont township, Warren county; Monmouth; Donaldson; Johnson township, Plymouth county; Gray township, Taylor county; Kinest township, Carroll county; Des Moines; What Cheer; Davenport.

Scarlet Fever: Hartley; Dallas Center; Quick; Village township, Van Buren county; Griggs township, Ida county; Ryan; Lake township, Cerro Gordo county; Washington township, Story county; Humboldt; Des Moines; Blockton.

Smallpox: Calmus; Hamilton; Cedar Rapids; Hocking; Burlington; River Sioux; Oxford Junction; Ashton; Sheldon; Sloan; Sioux City; Council Bluffs; Sibley; George.

Typhoid Fever: Gowrie, Milo; Medora; Clark township, Tama county; Burlington; Colo; Davenport.

Whooping-cough: Des Moines; Colo.

KANSAS. The Secretary of the State Board reports (January 5, 1901) for the month of December: *Smallpox* at twenty-seven places, with an aggregate of 262 cases with 2 deaths.

KENTUCKY.—Elizabethtown, December 13: *Typhoid fever* is epidemic in this county. In Elizabethtown alone there are 39 cases of the disease and 6 cases are reported in the country surrounding the city.

LOUISIANA.—New Orleans, 300,000—90,000 colored: Report for November: Total deaths, 541—199 colored; death rates, whites, 19.52; colored, 26.53; total, 21.64; deaths under five years, 117—36 colored; from cerebro-spinal meningitis, 3; typhoid fever, 15; malarial fevers, 9; scarlet fever, 3; diphtheria, 4; smallpox, 1; acute lung diseases, 41; consumption, 69; tuberculosis, 11; cancer, 21.

MARYLAND.—The State Board of Health held its annual meet-

ing January 10 and re-elected officers as follows: President, Dr. William H. Welsh; secretary, Dr. John S. Fulton; inspector of food, Mr. Charles N. Mitten, of Westminster; chemist, Prof. W. B. D. Penniman; bacteriologist, Dr. William R. Stokes; laboratory assistant, Miss E. M. White; clerks, Misses E. M. Rullman and M. L. Rullman.

In his monthly report Secretary Fulton stated that there were 30 cases of smallpox in Montgomery, Prince George and Allegany counties, and that all had been isolated. Dr. John Morris, a member of the board, announced that he would read a paper at the February meeting on "The Sewerage of Baltimore."

Baltimore, 541,000—78,000 colored. Report for November, 1900: Total deaths, 782, an increase of 119, compared with the corresponding month of November, 1899. Of these, 595 were whites and 187 colored; a death rate of 15.42 per 1,000 for the former and 28.77 per 1,000 for the latter. The death rate per 1,000 for the whole population is 17.34. Sixty-nine died from infectious diseases, 93 from consumption, 71 from pneumonia, 20 from bronchitis, 49 from Bright's disease and 25 from typhoid fever. Two hundred and thirteen, or 27.23 per cent., of the total deaths were in children under five years of age.

During the month 469 cases of infectious diseases were reported, a decrease of 9, compared with the preceding month.

MASSACHUSETTS. Boston, 560,892: Board of Health report for the week ending January 12th: The total number of deaths reported was 233, against 240 the corresponding week last year, showing a decrease of 7 deaths, and making the death rate for the week 21.67.

The number of cases and deaths from infectious diseases reported is as follows: Diphtheria, 154 cases and 10 deaths; scarlatina, 50 cases and 2 deaths; typhoid fever, 16 cases and 4 deaths; measles, 61 cases and 3 deaths. The deaths from consumption were 29; pneumonia, 35. Deaths of children under five years, 68.

MICHIGAN.—The Secretary of the State Board reports for December, 1900, compared with the preceding month, that influenza, pleuritis, pneumonia, inflammation of bowels, smallpox and erysipelas were more prevalent; and diarrhœa, inflammation of kidneys, intermittent fever, diphtheria, dysentery, cholera morbus and whooping-cough were less prevalent.

Of the most dangerous communicable diseases, cerebro-spinal meningitis was reported present in Michigan during the month of December, 1900, at 6 places; whooping-cough at 18 places; measles at 40 places; smallpox at 60 places; diphtheria at 69 places; con-

sumption at 163 places; scarlet fever at 166 places, and typhoid fever at 225 places. Reports from all sources show cerebro-spinal meningitis reported at 2 places more; whooping-cough at 2 places less; measles at 11 places more; smallpox at 23 places more; diphtheria at 6 places less; consumption at 11 places less; scarlet fever at 2 places less; and typhoid fever at 29 places less, in the month of December, 1900, than in the preceding month.

Deaths reported to the Secretary of State for December 2, 675; death rate, 13.1 per 1,000 population. This number is 214 more than the number reported for the preceding month and 216 more than the number returned for December, 1899. There were 402 deaths of infants under one year of age, 175 deaths of children aged one to four years, both inclusive, and 740 deaths of persons aged sixty-five years and over. Important causes of death were as follows: Pulmonary tuberculosis, 141; other forms of tuberculosis, 37; typhoid fever, 116; diphtheria and croup, 68; scarlet fever, 36; measles, 1; whooping-cough, 5; pneumonia, 300; diarrhœal diseases of infants, 35; meningitis, 21; influenza, 30; cancer, 127; accidents and violence, 147; smallpox, 2. As compared with the preceding month, there was a decrease in the number of deaths from typhoid fever, diphtheria and croup and measles and an increase in the number of deaths reported from pneumonia.

MINNESOTA.—St. Paul, 165,000. Report for November: Total deaths, 141; death rate, 10.24; deaths under five years, 34; from typhoid fever, 1; croup and diphtheria, 15; acute lung diseases, 12; consumption, 21; cancer, 5.

MISSOURI.—St. Louis, 575,200—37,000 colored. Health Department report for November, 1900: Total deaths, 729; from zymotic diseases, 112—croup and diphtheria, 56; typhoid fever, 15; scarlatina, 5; phthisis and tuberculosis, 82; pneumonia, 68; bronchitis, 22; other diseases of respiratory organs, 15; deaths of children under five years, 190—19 colored; death rates, whites, 12.27; colored, 25. 26: 15.12.

NEW JERSEY.—Hudson county (Jersey City, 204,603; Bayonne, 32,722; Hoboken, 59,364; West Hoboken, 28,721; Weehawken, 3,412; Union, 16,736; West New York, 11,760; North Bergen township, 12,427; Guttenberg, 6,741; Kearny, 15,572; Harrison, 11,216): 386,048. Report for November, 1900: Total deaths, 494; death rate, 15.4; deaths under five years, 161; deaths from diphtheria and croup, 27; typhoid fever, 8; other

zymotic diseases, 15; phthisis, 67; pneumonia, 55; bronchitis, 24.

Newark, 250,000. Report for four weeks ending January 5th: Total deaths, 389; death rate, 18.64; deaths under five years, 121; typhoid fever, 8; croup and diphtheria, 12; acute lung diseases, 61; consumption, 52; cancer, 6.

Paterson, 105,171. Report for November: Total deaths, 118; death rate, 12.5; deaths under five years, 31; from diphtheria, 5; typhoid fever, 3; acute lung diseases, 19; consumption, 14; cancer, 8.

NORTH CAROLINA.—The State Board of Health Bulletin reports for November from sixteen towns having an aggregate population of 113,650—46,724 colored: Total deaths, 149—70 colored; death rates, whites, 14.2; colored, 18.9; total 15.7; deaths under five years, 48—22 colored; from typhoid fever, 11; malarial fevers, 14; diphtheria, 3; pneumonia, 6; consumption, 18.

OHIO. State Board Bulletin for nine weeks ending December 29, 1900: 90 places, with aggregate population of 1,567,264, report: Diphtheria (including membraneous croup), 1,137 cases, 160 deaths; typhoid fever, 447 cases, 94 deaths; scarlet fever, 1,061 cases, 16 deaths; whooping-cough, 125 cases, 11 deaths; measles, 259 cases, 4 deaths.

Cleveland, 395,000. Report for November: Total deaths, 391; death rate, 1,188; deaths under five years, 134; deaths from typhoid fever, 8; scarlet fever, 3; croup and diphtheria, 32; acute lung diseases, 33; consumption (phthisis 9, tuberculosis 26), 35; cancer, 12.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for four weeks ending January 5: Total deaths, 1,754; deaths under five years, 428; from typhoid fever, 39; croup and diphtheria, 70; acute lung diseases, 213; consumption, 238; cancer, 61.

Pittsburg, 321,616. Report for four weeks ending December 29: Total deaths, 424; from typhoid fever, 41; croup and diphtheria, 14; acute lung diseases, 43; consumption, 25; cancer, 17.

RHODE ISLAND.—Newport ("Mercury"), January 15: Board of Health established! City Council abolishes committee on health and sanitation; several ordinances passed; the last meeting of the year gave retiring members a chance to add to their laurels. These are described on a preceding page.—At the last meeting of

the City Council of 1900 several ordinances were passed of more or less importance. One of the most important actions taken was the passing of the ordinance abolishing the Committee on Health and Sanitation and creating a Board of Health consisting of two physicians and three lay members. This ordinance was pushed through against strong opposition and the members were immediately elected as follows: Board of Health, Dr. R. E. Darrah, Dr. H. G. MacKaye, William Shepley, James B. Cottrell and William Hamilton.

TEXAS.—Prospect of a State Board of Health. The "Galveston News" of December 23d reports the adoption of a resolution by the Democratic Convention, at Waco, December 22d, as follows:

"*Resolved,* That we favor the creation of a State Board of Health with the provision for the collection of vital statistics of the State, as provided for by the Constitution, Article 16, Section 32, and the enactment of laws to distribute the expenses of improvement of quarantine equitably between the State, counties and municipalities."

The "News" urges united action by the friends of the measure. The Texas State Medical Association has appointed a committee to draft a bill creating and defining the powers of a State Board of Health as contemplated by the resolution. Its scope is expected to enlarge and make more efficient the State Health Department than it has ever been heretofore.

UTAH.—Salt Lake City, 70,000: Board of Health report for November shows there were 58 deaths, as against 38 for the corresponding month in 1899; death rate, 13.13. Twenty-two died in hospital. There were 100 cases of smallpox reported. Other cases of infectious diseases for the month were: Scarlet fever, 39; diphtheria, 3; measles, 2; chicken-pox, 7; typhoid fever, 19.

WASHINGTON.—Seattle, 90,000. Report for November: Total deaths, 63; death rate, 8.40; deaths under five years, 13; from scarlet fever, 1; consumption, 7; cancer, 2.

WISCONSIN.—Milwaukee, 290,000. Report for November: Total deaths, 282; death rate, 11.86; deaths under five years, 108; from typhoid fever, 7; measles, 2; whooping-cough, 2; croup and diphtheria, 14; pneumonia, 23; tubercular diseases, 42; cancer, 13.

Ashland, January 9.—There are 72 cases of typhoid fever reported to the Board of Health.

ONTARIO.—*Typhoid Fever:* Toronto, December 11.—According to the returns for November, at the Provincial Board of Health, the past month was notable for the most serious outbreak of typhoid in the history of the province. With about 100 municipalities yet to hear from, there are recorded 125 deaths from typhoid, the previous record being 117 deaths, which occurred in October.

CITY OF MEXICO, 344,377. Bulletin for August, 1900: Total number of deaths, 1,402; annual death rate, 48.8; prevailing diseases and deaths caused by them, respectively: Diarrhœal diseases, 438; tubercular, 162; pneumonia, 88; cirrhosis of the liver, 62; heart diseases, 52; typhus fever, 48; meningitis, 41; bronchitis, 40; inflammation and abscess of liver, 25; apoplexy, 20; cancer, 20; pulmonary apoplexy, 16; broncho-pneumonia, 14; smallpox, 11; alcoholism, 10; other diseases, 1 to 8.

HEALTH OF THE NAVY.

Report of the Surgeon-General, U. S. Navy, for the year 1899. It embraces a statement of the condition of the naval hospital fund, the naval medical establishment, other matters of interest pertaining to the duties of the Bureau of Medicine and Surgery, and a statistical report showing the health of the Navy for the year 1899.

The Hospital Corps organization has now reached a standard of efficiency enabling the Bureau to make all appointments of hospital stewards from hospital apprentices, first class, by examination and promotion. But the enlistments of hospital apprentices are not as yet sufficient to enable the Bureau to keep as large classes as are desired at the larger naval hospitals for instruction.

Of the Medical Corps, there are now seventeen vacancies in the list of assistant surgeons, but it is anticipated that these vacancies will soon be filled when it is generally known that recent legislation has given assistant surgeons in the Navy the same rank as assistant surgeons in the Army. The medical officers of the Navy have maintained their standard of efficiency, notwithstanding their disadvantages hitherto. They have been constantly employed, and during the past year very few have been able to obtain the customary leave, even during the summer months.

The naval hospitals, navy yards, naval stations and receiving ships are summarily described with reference to their sanitary condition, efficiency and requirements.

The Naval Museum of Hygiene had thirty-four additions made to its exhibit of food, exercise, bathing, lighting, surgical appli-

ances, building material, filtering apparatus, etc., during the year; and effected a rearrangement of the entire exhibit, by which the articles are more definitely classified. Five hundred and thirty-seven chemical, bacteriological and microscopical examinations were made, mostly for the purpose of clinical diagnosis. The library was increased by the addition of 193 volumes of bound books, and complete files of medical and scientific journals, including health reports for the period. The Museum has also been engaged in the selection and arrangement of a new microscopical outfit for service at sea.

The *health record* of the Navy and Marine Corps for the calendar year 1899 shows a marked decrease in the ratio of admissions to the sick list per 1,000 of strength, when compared with the previous year, notwithstanding the continued presence and prolonged cruising of ships in tropical waters and the occupation of shore stations in tropical possessions. This ratio during the past year was 783.03 as against 871.69 in 1898, 838.53 in 1895, 775.75 in 1896, and 748.24 in 1897. The average strength of the active list for the year was 20,819. Complete returns were received from a total force of 20,113, the difference representing persons on detached and special duty, leave, or waiting orders, and crews of small vessels unprovided with medical officers, from whom returns in detail are not received. The total number of admissions for disease was 12,794, and for injuries 2,955, giving a ratio per 1,000 of strength of 636.11 and 146.92, respectively. The total number of sick days was 235,725, giving an average of 11.22 days for each man of the Navy and Marine Corps, and 14.97 days as the average duration of treatment per case. In 1898 the corresponding averages were 10.75 and 12.33, respectively.

The number of persons invalided from the service (including retirements of officers for disability and transfers to the Government Hospital for the Insane) was 542, a ratio per 1,000 of strength of 26.03. In 1898 there were 884 persons invalided from the service, and the ratio per 1,000 of force was 36.85.

There were 153 deaths during the year—95 from disease and 58 from injuries (including poison). The death rate was 7.35 per 1,000 of strength (4.56 from disease and 2.79 from injury). The death rate per 1,000 of strength in 1898 (exclusive of the *Maine* casualties) was 7.21 (4.92 for disease and 2.29 for injury).

During the year there were admitted to the sick list of the total force 943 cases of malarial disease, 900 of diarrheal affections, 884 of wounds, 716 of rheumatic affections, 685 of bronchial affec-

tions, 672 of epidemic catarrh, 297 of dengue, 193 of alcoholism, 154 of heat stroke, 134 of typhoid fever, 117 of pneumonia, 87 of pneumonic tuberculosis, 68 of dysentery, 42 of organic heart disease, 37 of measles, 31 of nephritis, 29 of scarlet fever, 8 of yellow fever, and 6 of small-pox.

Of the 943 cases of malarial diseases nearly one-third were from the navy-yard and marine headquarters, Washington, D. C. Of the 134 cases of typhoid fever reported during the year, 49 were under treatment in the naval hospital, Newport, R. I. Of this number, 45 originated among the personnel of the training station, 1 was received from the torpedo station, and 3 from the ships of the North Atlantic Squadron. Twenty-five cases of typhoid fever were returned from the naval station, Guam, L. I., and 2 from the Cavite station.

The cases of yellow fever in the regular returns were from the naval station, Havana, Cuba; but 1 death from that disease occurred elsewhere. The six cases of small-pox occurred on the Asiatic Station.

There were 21 deaths during the year from gunshot wounds. Among the deaths from disease incident to naval operations in the Tropics were 5 from yellow fever, 4 from small-pox, and 3 from diarrheal affections, including 1 case of chronic dysentery.

The special reports on the sanitary condition of the cruising ships, by the medical officers in charge, respectively, show that some of them still maintain faults of construction with but slight regard to the health and comfort of the sick. For example: "The flagship *New York* has been six years in commission without a thorough overhauling. The flushing system is so constructed that the water which has passed through the condensers to cool the steam for distilled water, and has become heated thereby, has to be forced through the wash rooms, urinals, and water-closets. This water is so hot in the firemen's wash room that it is impossible for them to use the shower baths, and having only the bowls to use, they keep clean with much difficulty. It is also so hot in running through the heads that the crew cannot sit on the seats provided therein on account of the steam. I am glad to report that a change has been ordered in the arrangement of this system, so that cool water from overboard will be circulated instead. This will tend also, incidentally, to lessen the temperature within the vessel along the course of the pipes.

"The *Baltimore*. The sick bay is situated on the after torpedo flat beneath the lower cabin, having been shifted from its former

position forward on the berth deck when the ship was last commissioned at Mare Island. This has been found to be very inconvenient and unsuitable for berthing the sick in this tropical climate. It is directly over the dynamo and steering engine, and even in port, with outlets open, it is 8° to 10° warmer than the berth deck. It has no water supply, no bath tub, and is separated the whole length of the ship from the dispensary and medical storeroom. The light, too, is very deficient. The former sick bay, forward, is sadly incommoded by yeoman's storerooms, which open into it, and by the anchor chains that pass through it, but even with these drawbacks it is cooler, has water supply, bath and closet, and is adjacent to the dispensary and storerooms. Permission has been granted to restore the sick bay to its old situation, and the change is now being made.

"Training Ship *Lancaster.* The water-closet facilities for the crew are very inadequate, as there are only eight seats in all, or about one seat for every 52 men. The degree of inconvenience and discomfort and the relation to the health of the crew become apparent without additional statement.

"The *Monadnock.* The sensation on entering the wardroom is similar to that on entering a Turkish bath, and the deck of the rooms and wardroom is hot to the touch. The temperature in the wardroom averages about 93° F. to 98° F., and it has been stationary at 100° F. at noon under the open hatch ($3\frac{3}{4}$x$4\frac{3}{4}$ feet) over the wardroom table, with a large horizontal electric fan working in this hatch, and two fans about 20 feet off, forcing the air to a common center under the hatch. I am inclined to believe that life on board this ship develops and aggravates a neurasthenic condition. Subacute articular rheumatism is also quite common."

"Report on the Sanitary Relations of the Philippines Islands to the Naval Fleet," and some other special reports of general interest we shall endeavor to find room for hereafter.

BOOK REVIEWS.

PUBLICATIONS OF THE UNIVERSITY OF THE STATE OF NEW YORK, 1899-1900: 1. Home Education, Bulletin No. 30, Summer Schools, by MELVIL DEWEY, Director; No. 31, Public Libraries and Popular Education, by HERBERT B. ADAMS, Ph.D., LL.D., Johns Hopkins University. 2. College Department Reports of the State

of New York, 3 volumes; Reports of Director, 1898 and 1899. 3. Professional Education in the United States, prepared by HENRY L. TAYLOR, Ph.D., under direction of JAMES RUSSELL PARSONS, JR., M. A.

1. The Bulletin on Summer Schools shows an increasing tendency to make them a permanent part of the system of education. "Even to teachers who are not conscious of longing for intellectual stimulus, there is a practical incentive to Summer work in the constantly increasing equipment demanded from the profession." The New York schools comprehend collegiate and preparatory departments, schools of fine arts, school of pedagogy, school of religious teaching, school of music, school of expression, New York State free institute, school of domestic science, school of practical arts, school for parents—Natural Science Camp, and State Library School. These are all described with some detail. Summer Schools and their attractive features in other States are also referred to. The Bulletin on Public Libraries is a monograph of nearly three hundred pages, descriptive of the relation of public libraries, illustrative of certain phases of library extension and library coöperation for the promotion of popular education. The work of the National Bureau of Education and of several of the States, in establishing and popularizing libraries, is briefly described in conjunction with the work of public benefactors in founding libraries, and distinguished librarians. The free public library movement and its promoters during recent years, the elaboration of library extensions, travelling libraries, library schools, etc., with a view to the greatest practical benefit of books, are leading subjects lucidly described. It is admirably illustrated with plans of the best-arranged libraries and portraits of distinguished founders and librarians.

2. The College Department Reports summarize the work of the universities, colleges, professional and technical schools; growth of professional schools; State Boards of Examiners, calendars, examinations, degrees conferred, etc., etc., of special interest to the professions in the State of New York.

3. Professional Education in the United States is an 8vo volume of thirteen hundred and fifty-four pages. Yet it is concise, on account of the magnitude of its scope. It comprehends the growth, distribution of schools and students, the varying standards of professional education, synopsis of requirements, summaries and institutions by States, statistical tables and much of other closely related matter, with special reference to recent

statutes of the State of New York for protection against incompetent practitioners of the learned professions, as well as against untrustworthy corporations in insurance or banking. The university recognizes its responsibility for the administration of the State's protective laws and regulations, and for the registration of the standards for license and for admission and graduation from the various professional schools of other States and countries. The volume is replete with information thus related and is a mine of collateral knowledge on the bearings of professional education in other States.

REPORT OF THE MORTALITY RECORDS OF THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK FOR FIFTY-SIX YEARS—1843 TO 1898. ELIAS J. MARSH, M. D., and GRANVILLE M. WHITE, M. D., Medical Directors. This report, we are told, was prepared to accompany and describe the diagrams and tables exhibited by the Mutual Life Insurance Company of New York at the Paris Exposition. It represents the mortality records of the company from the commencement of its business in 1843 to the end of the year 1898. During the period there were 40,545 deaths. In the year 1844 there were only 3 deaths; in 1898, 3,421. The actual number, yearly, for the whole period is tabulated, and the causes with their respective percentages of the whole number of deaths. The ages of decedents and the causes of death and the percentages of mortality are grouped in colored diagrams with segments denoting three age periods, viz: under 45 years; 45 to 60 years and above 60 years, showing the number of deaths from each cause and the percentage of these for each age period. We commend the report to all students and registrars of vital statistics for the excellence of its arrangement in differentiating diseases and showing the percentages of deaths from specified causes in different age periods.

REPORT OF THE COMMISSIONER OF EDUCATION, 1898-99, VOL. I. Washington: Government Printing Office. A volume of 1,340 pages, comprehending the enrollment of schools and colleges, public and private, during the year, the number of pupils of all grades, the classification of States with their respective numbers of pupils of different grades—elementary and secondary instruction—and students receiving higher education. Total enrollment, 16,738,362 pupils, an increase of 50,719 over the previous year, besides 486,908 enrolled in special institutions—city evening schools, business schools, Indian schools, schools for defectives, reform schools, kindergartens, etc., making the grand total 17,225,270.

The average number of years of schooling (of 200 days each) that each individual of the population of the United States received was, in 1898, 5; in 1899, 4.96. In the North Atlantic division of States, in 1898, 5.75, 1899, 5.67. In the South Atlantic division, for the two years respectively, 2.87, 2.78; South Central division, 2.68, 2.88; North Central division, 5.25, 5.14; Western division, 5.25, 5.28.

Description of the schools in the Philippines, as they were before American occupation, is incorporated, from a letter by Señor Felipe Agoncillo, to the "New York Journal," February 3, 1899. The scope of the studies in the primary schools is similar to American schools. The teachers are to a considerable extent priests, though many are graduates of normal schools. Academies exist in all capital cities where scholars are fitted for admission to the University of St. Thomas, an institution established in 1602. It is under the control of the Dominican Fathers so far as instruction is concerned, but, like the primary schools and academies, supported by the Government. Here the youth receive instruction in higher branches leading to the degree of bachelor of arts. In connection with it are the schools of medicine, law and theology, with an attendance of more than 2,000 students. There are, besides, seminaries in Manila, Cebu, Jaro and several other cities. Besides, there are in Manila a normal school which requires a seven years' course, a nautical school, a manual training school and a school of painting, sculpture, etc. The status of education in Porto Rico is also given from the report of Mr. Victor S. Clark, acting Superintendent of Education, to General Geo. W. Davis while Military Governor, showing the need of important modification. Education in foreign countries is described and recent advances particularized. Next follow important chapters on Classification and Promotion of Pupils; The Development of the Common Schools in the Western States from 1830 to 1865, by the Rev. A. D. Mayo; The Royal Normal College for the Blind, London, together with Incidents in the Life of Its Founder and President, Dr. F. J. Campbell, of Tennessee, by John Eaton, formerly U. S. Commissioner of Education; Miscellaneous Educational Topics—military drill, uniform financial reports, need of action for the amelioration of the condition of the colored race, organization and conduct of professional schools, etc.; The Study of Art and Literature in Schools; The Western Literary Institute and College of Professional Teachers; The United States Naval Academy at Annapolis—Its Organization and Methods of Training, by Edward S. Holden, Sc. D., LL.D.; Public Education in Italy and

Its Reform; University Extension in Great Britain; School Gardens; Education in France; Confederate Text-Books (1861-1865) —A Preliminary Bibliography; Educational Directory; Applied (or Economical) Geography; A Review of Swedish Gymnastics; The Future of the Colored Race.

A TREATISE ON LARYNGOLOGY. A brochure of 36 pages with a laminated colored plate admirably displaying the anatomy of the larynx and contiguous parts, and good textual description. The R. G. Booth Co., Ithaca, N. Y.

BEANS, PEAS, AND OTHER LEGUMES AS FOOD. By MARY HINMAN ABEL. Farmers' Bulletin No. 121. U. S. Department of Agriculture. Pp. 32. Illustrated. An excellent summary of useful and practical information on the distribution, nutritive value and practical use of this class of foods. Edited by W. H. BEAL.

LIMITED GRASS LANDS, Farmers' Bulletin, No. 122, is a practical essay of 32 pages on limeing grass lands, early plowing for wheat, grafting grape cuttings, culture and use of olives, nuts as foods, coffee substitutes, the working of the pure food law, selling eggs by weight, relation of feed to the flavor of eggs, feeding moldy corn, preparation of unfermented grape juice and an explanation of the terms used in discussing these subjects.

NUTRITION INVESTIGATIONS AT THE CALIFORNIA AGRICULTURAL EXPERIMENT STATION. By M. E. JAFFA, M. S. Pp. 40. Bulletin No. 84, U. S. Department of Agriculture. These investigations form a part of the studies on the nutrition of man conducted in different regions of the United States under the supervision of Prof. W. O. Atwater. They include a number of analyses of food materials, two dietary studies of adults (one with the family of a chemist, the other with a football team), four dietary studies of infants, one digestion experiment with an infant, and a metabolism experiment with an infant in which the balance of income and outgo of nutrition was determined. The functions of food, analysis of food materials and description of the samples of food analyzed, are briefly described as a basis of the experiments that follow.

The tabulated results of the daily consumption of food by the members of the California team, as compared with the average of a Connecticut team studied in 1890, and with the average of seven studies of members of college boat crews made in 1898, show that the average of the boat crews is equivalent to the standard for a man of active muscular labor, and the average for the Connecticut team is equivalent to that for a man at severe muscular labor; while

the average for the California team exceeds the standards for a man occupied at very severe muscular labor, 35 per cent. in the amount of protein consumed, and 5½ per cent. in energy; apparently a very decided excess in protein, and relatively smaller excess in fuel ingredients. The summary of the dietary studies of infants is inconclusive in regard to both quality and quantity. The variations in consumption by different infants of the same age are too wide to allow of an average that would be representative.

THE DIGESTIBILITY AND NUTRITIVE VALUE OF BREAD. By CHARLES D. WOODS, Director, and L. H. MERRILL, Chemist. Pp. 51. Bulletin No. 85. Maine Agricultural Station (under the supervision of Prof. W. O. Atwater). U. S. Department of Agriculture. This report is a part of the series of investigations not yet complete on the digestibility of various kinds of bread when eaten alone and when forming the principal part of a simple mixed diet, the determination of the amount of metabolic nitrogen in feces, the digestibility of bread of different sorts by artificial methods, the comparative value of bread made with skim milk and with water, and the losses in bread-making.

In the majority of digestion experiments milk was consumed ad libitum with bread. Small amounts of butter and sugar were also eaten. The experiments show that bread alone is less digestible than when eaten with milk or with butter and sugar—"that the nutrients of a given article are more thoroughly assimilated when it is consumed with some other food than when eaten alone."

THE PHILADELPHIA MEDICAL JOURNAL hitherto has been what Dr. George M. Gould has made it. We learn that he has been summarily dismissed from its editorial charge, beginning with January, 1901. But we are glad to have been informed that Dr. Gould purposes establishing a new journal on a more enduring basis.

CONTEMPORARY LITERATURE.

THE NORTH AMERICAN REVIEW begins the new century with a number which, by the importance and diversity of the subjects discussed in it and by the ability, celebrity and representative character of its contributors, more than maintains the high reputation it has won as the greatest and best review published in the

English language. Ex-President Harrison, in the opening article, treats of the constitutional "Status of Annexed Territory and of Its Free Civilized Inhabitants," pleading for an adherence, in our policy, to the old American thought of man as a creature of God, endowed with "inalienable rights." M. de Blowitz, in a paper entitled "Past Events and Coming Problems," glances at the things that have happened during the past century, especially in France, and the task that lies before the nations in future years. General R. A. Alger, formerly Secretary of War, writes of "The Food of the Army During the Spanish War," arraigning General Miles for his memorable attack upon General Eagan and the Commissary Department. Sir Robert Hart, Inspector-General of the imperial Chinese customs and posts, in "China and Her Foreign Trade," tells how the Chinese regard the attempts of foreign nations to cultivate commercial relations with them. Mr. Alfred Harmsworth, editor and proprietor of the London "Daily Mail," foretells the character and methods of "The Simultaneous Newspapers of the Twentieth Century," when the trust shall have entered the field of journalism. The Duke of Argyll sets forth the present "Political Situation in Great Britain," and the influences which are responsible for it. Hugh H. Lusk, apropos of the establishment of the Australian Commonwealth, describes "The New Power in the South Pacific," the phenomenally rapid growth of the colonies of which it is composed, its varied resources, its value to Great Britain, and the purposes and ambitions which are likely to determine its action as a nation. Louis Windmüller advocates certain "Substitutes for Ship Subsidies," which, in his opinion, would better stimulate the growth of our mercantile marine than the measure now under the consideration of Congress. Amherst Webber records some extremely interesting reminiscences of "Some Interpreters of Wagner," and notes regarding their methods of work. D. Menant, in the fifth article of the series on "The Great Religions of the World," gives an account of "Zoroastrianism and the Parsis," and Mr. W. D. Howells, reviewing Mr. E. C. Stedman's "American Anthology," presents a study well worth reading of "A Hundred Years of American Verse."

THE LIVING AGE opens its two hundred and twenty-eighth volume with the number which bears date on the first Saturday of January. So long a period of continuous publication, running back fifty-seven years, presupposes qualities of enduring value in the magazine and a large measure of attachment on the part of its

readers. The fact is that the editors of the magazine has been singularly successful in retaining the characteristics which gave the periodical its original hold upon the reading public, and at the same time broadening its scope and introducing new elements of variety and timeliness. Literature, art, science, biography, travel, poetry, public affairs, and the best fiction in short and serial stories find a place in its well-stored pages; and there is not a single weekly number which does not contain something which intelligent readers of whatever special tastes would be poorer for missing. The magazine is published by The Living Age Company, Boston.

OVERCROWDED LONDON.

At the present moment, writes Sir Walter Besant in the January "Century," those parts of East London inhabited by the workmen of all kinds, from the respectable artisan in steady employment down to the casual hand and the children of the street, are suffering from the dearth of houses. There are not enough houses for the people; there are not enough single rooms for the families which would gladly occupy them, if they could. The rents of the lowest tenements are going up higher and higher. The working people compete with one another for rooms. The landlord has only to put up his house, or his rooms in his house, to the highest bidder. A room that used to be let for four shillings a week can now command six, while the fine, or the sum paid on taking the key, which was formerly a few shillings, now runs up to a pound, or even two. The houseless used to be considered the very poorest. Among them now are families where the head is in good work. They are houseless because there are no houses for them. The vast increase of population has a good deal to do with this. For instance, the outlying suburb of East Ham, twenty years ago a mere hamlet with a few houses and an old church in the fields, now numbers ninety thousand people, all of the working class; while its neighbor, West Ham, which twenty years ago consisted of two or three scattered hamlets, is now a great town of two hundred and seventy thousand people, all of the working class.

PALACE AND TENEMENT.

Jacob A. Riis, author of "How the Other Half Lives," who revisited Kronborg Castle, Elsinore, some time ago, has an article on "Hamlet's Castle" in the January "Century."

The sergeant's wife, who was our guide, recalled us to the present. "Here," she said, "in this tower-room Queen Caroline

Matilda sat a prisoner when Struensee was beheaded." How oddly the past and the present touch elbows! To me the name of King Christian VII's masterful Minister painted with one stroke a great historic panorama; the fateful masquerade ball, with its tragic ending; the queen, disgraced; her friend, but an hour before the most powerful man in the kingdom, in chains, the victim of a court cabal; the great square, with the silent crowds about the scaffold; the headsman's ax. And as the background of it all, a room in a New York tenement, with the sunset slanting through the window and touching something on the floor that was red and hideous. So, seeking an explanation of the familiar but unusual name in the police reports, I had found him, the last of the Struensees, dead by his own hand. He was a poor shoemaker; his great-granduncle Minister of State, favorite of a queen, unhappy sister of George III, wedded to a royal imbecile, more sinned against than sinning, whatever her guilt. This, then, was the aerie she had begged of her jailers as a pitiful boon, she who had ruled a kingdom. I looked around for the words she wrote upon the barrel window-pane in her bitter anguish, "Keep me innocent; make others great." "It was cut out twenty years ago by an English autograph-collector," said the guide, smiling at my search. "They are everywhere."

THE AMERICAN MONTHLY REVIEW OF REVIEWS for January has great variety and extraordinary and timely topics. It happens to have several important and carefully written articles about people, prominent among which is to be mentioned a very brilliant review of President Gilman's administration of the Johns Hopkins University, contributed by Dr. Nicholas Murray Butler, of Columbia University, the foremost authority on educational work in the United States. There is a sketch of Mark Twain, apropos of his return to the United States, which gives a very convenient review and summary of his long literary life. Sir John Tenniel, the great cartoonist of "Punch," completes this month fifty years of continuous work upon that venerable and amusing London weekly, and Dr. Shaw, with some comments upon Tenniel's career and methods as a cartoonist and draughtsman, reproduces a considerable number of his most famous cartoons, including two or three of his Lincoln cartoons at the time of our Civil War. Dr. Samuel G. Smith, of St. Paul, contributes an appreciative character sketch of the late Senator Cushman K. Davis; and Mr. Murat Halstead, who had known Henry Villard for forty years, writes very inter-

esting reminiscences of that distinguished railroad builder and financier. Mr. Lusk, an Australasian statesman, contributes an article upon the resources and prospects of the new Australian Commonwealth, which began its career on the 1st of January, while Mr. James B. Rodgers, who has studied the subject with great care, writes an illuminating article on "Friars, Filipinos and Land," apropos of some of the most important problems we have to face in the Philippine Islands. A somewhat remarkable feature of this month's "Review" is a full list of the members of the Electoral College, in connection with which Dr. Shaw contributes some pages of comment upon the history and working of our peculiar method of selecting a President. In Massachusetts there is a public commission charged with the care of park reservations contributed by individuals to the commonwealth; and an extremely attractive illustrated article explaining the work of this commission is contributed by Mr. Sylvester Baxter. This number of the "Review" is full of timely portraits and general illustrations—150 pictures. The editor's department, entitled "The Progress of the World," is an exceptionally well-rounded review of public affairs at home and abroad, and the "Leading Articles of the Month," condensed from other periodicals, present many topics of especial moment.

THE NEW YORK HOME MAGAZINE for January has three features of twentieth century interest. The cover, by Philip R. Fassett, is symbolic of the dawn of the twentieth century. An article on "Twentieth Century New York" is by Mr. W. R. Corwine, of the Metropolitan Merchants' Association, and an article of editorial interest entitled "The Wonderful Century," by Prof. Jerome Dowd.

THE CLOSING CENTURY.

Apropos of "The Dawn of the Twentieth Century," Tudor Jenks contributes to the January ST. NICHOLAS an article reviewing briefly the course of history since the beginning of the Christian era, each century being treated in a single paragraph. To the summary of the chief events of the nineteenth century he adds: "The steam engine has brought the whole world within reach of every nation; the telegraph brings all happenings within knowledge; modern weapons have made the most advanced nations irresistible by untrained peoples; the printing press brings the intelligence of whole peoples to bear on every question. Elec-

tricity becomes man's servant, and he learns to turn forces into one another.

"The civilization of our times, probably beginning in the Mesopotamian Valley, is first known in Egypt. Thence it goes northeastward around the Mediterranean to Babylonia and Phœnicia, next to Greece, and then to Rome. From Rome it extends widely, but is forced at length northward and westward through Europe and to England. From England it passes to America, and, crossing the continent to the Pacific, seems now about to take its way through Japan to Asia. If, in this century, it can make sure its sway over Asiatic peoples, it will have encircled the globe.

"During the nineteen centuries since the birth of Jesus Christ, there has been no influence comparable to that of His life and teachings."

PAMPHLETS, REPRINTS, REPORTS, ETC., RECEIVED.

How Far Has Specialism Benefited the Ordinary Practice of Medicine? Ibid.

Transportation of the Dead. New Jersey State Board of Health, Trenton, N. J.

City Garbage and Refuse, Its Disposal and Conversion Into Power. The Morse-Boulger Destructor, New York.

Alcoholic Gastritis. J. A. Hofheimer, M. D., New York.

Mosquitoes and Malaria. McKesson & Robbins, New York.

Fresh Air In-Doors. R. M. Pancoast, C. E., Camden, N. J.

Water Supply and Disposal. Chas. Rodman, M. D., New Haven, Conn.

Smallpox. J. A. Knight, M. D., Eatonton, Ga.

Typhoid Fever. Samuel E. Earp, M. D., Indianapolis, Ind.

Especial Hospitals for Consumption Among the Poor in Our Cities. Edward O. Otis, M. D., Boston, Mass.

Management of Obstetric Cases in Private Practice. Joseph Brown Cooke, M. D., New York.

A Crushable Button as an Aid to Suturing in Intestinal Anastomosis. R. C. Coffee, M. D., Portland, Ore.

Advice to Gonorrhœal Patients. T. C. Valentine, New York.

Hystero-Epilepsy. W. H. Morse, M. D., Westfield, N. J.

Corneal Corpuscular Activity. Jos. E. Willetts, M. D., Pittsburg, Pa.

Degenerative Results of Defective Heredity. Chas. Denison, M. D., Denver, Col.

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SANITATION AND PROGRESS.*

By WALTER WYMAN, Surgeon-General, M. H. S.

Some four years ago, at the meeting of this Congress in the City of Mexico, I had the honor of addressing you upon the subject of International Responsibility with Regard to Epidemic Diseases. Quite in line with the thoughts then expressed, I have chosen for my subject to-night Sanitation and Progress, and it will be my effort to show the interdependence of municipal, national and international effort in the great undertaking of the elimination of contagious diseases, and that the twentieth century should witness this achievement.

Each morning I open on my official desk a package of newspaper clippings received from the Bureau of Press Clippings in New York, containing notices of the prevalence of the several contagious diseases throughout the whole United States; and, as I note the wearisome recurrence of small-pox, diphtheria, typhoid fever and scarlet fever, the notes upon consumption, the alarms concerning yellow fever and the bubonic plague, the thought which is impressed upon me is, how seriously are we lacking in proper effort in suppressing these *suppressible* diseases. Nothing seems easier to me than the prevention or suppression of small-pox. In vaccination we have an absolute preventive, and in the glycerinized lymph we have a safe inoculating material absolutely devoid of the danger of exciting undue inflammation. Thus a mere scratch or a needle puncture insures, without discomfort, protection from one of the most loathsome and disfiguring diseases known.

*Address at the meeting of the Pan-American Medical Congress, Havana, Cuba, February 7, 1901.

Even after small-pox has become epidemic, the methods by which it may be rapidly and surely suppressed have been so frequently demonstrated as to become now almost a matter of mere routine.

The antitoxin for diphtheria has long passed the experimental stage, and is now justly regarded as a specific—a trusty addition to the armamentarium of the physician and sanitarian.

In the treatment of the other diseases mentioned, we have for bubonic plague a specific cure and preventive, and are certainly on the verge of the discovery of specific remedies for both tuberculosis and typhoid fever, but even without these specific remedies, the nature of the diseases is thoroughly understood and the methods of the prevention of their spread are accurate and well known.

Then why do these diseases persist? The answer is plain. It is, that sanitary administration has not kept pace with scientific knowledge. It is also evident that this scientific knowledge is not so widely diffused as it should be, even among those of whom we have a right to expect it. It is evident that we are not making "use of those means which the God of Nature has placed in our power."

With regard to cities, there is a marked necessity of a strong public sentiment requiring that municipal cleanliness shall rank as one of the foremost features of municipal government. This is a field, not for the National Government, but distinctively for the States and municipalities, whose degree of sanitary excellence is a fair exponent of their civilization and culture; for each State and each municipality has, and will continue to have, a degree of sanitary excellence commensurate only with the demands of its own people.

We have here a striking illustration of the fact that our governments are governments *of* the people. It is, therefore, necessary to cultivate among the *people* a *demand* for municipal sanitary excellence, and as great an abhorrence of municipal filth, or neglect of sanitary engineering, as there is of uncleanly dwellings or of uncleanliness of person.

A good water supply, perfect sewerage and disposal of garbage, good street paving and street cleaning, should be the *first* boast of every municipality. Let *these* be pointed to with the pride which is commonly bestowed upon great public institutions and buildings. I see no reason why *slums* should be allowed in any

city. *Relatively* speaking, too much attention is paid to public parks and handsome municipal buildings. The city's "improvements" should be in the alleys, around the docks, in the tenement house quarters, and great as may be the appreciation of public art as manifested by statues and public gardens—and of the parks and the boulevards—let these wait upon the less showy but more important features of municipal life.

Recently I was on a board of three, the other two members being noted architects, to decide upon plans for the great government hospital for the insane near Washington, Congress having appropriated one million dollars for doubling the capacity of the present institution. In looking over the numerous plans and sketches submitted by the half dozen competitors, I was impressed with the promptness with which these two noted architects pounced upon all faults relating to light and ventilation, particularly of the lavatories, quickly throwing out as unworthy of further consideration those plans which placed the toilet rooms in dark or badly ventilated positions.

This illustrates the advanced modern idea, particularly when you reflect that these were formerly located in any dark or out-of-the-way place. So, too, in practical hospital work it has been my observation that dark closets are wont to be the repositories for old mops, rags and dirt, so that it was my rule, when engaged in the management of hospitals, to paint the darkest and worst closets a pure white, making immediately perceptible the slightest trace of dirt or filth. The trouble I experienced with these closets soon vanished.

These illustrations will serve with regard to cities. The chief attention should be centred upon the *worst parts* of the city. The sewerage, paving, light and ventilation of the *worst section* should receive the first and most constant attention.

In support of this idea, I quote from an article written five years ago by Dr. John S. Billings, who says:

"As regards Asiatic cholera, typhoid fever, various forms of diarrhœal and dysenteric diseases, and diphtheria, our knowledge of their causes, means of communication and prevention is much in advance of the actual practice of most communities, mainly because the methods which are known to be effective to secure constantly pure water supplies and the satisfactory removal and disposal of refuse and excreta, require considerable sums of money to establish and to maintain; and the public has not yet arrived at the conclusion that such expenditure is wise and proper, and

that taxation for such purposes is necessary to secure the prosperity of a community.

"A very considerable part of the excess of death rates in a city is due to the poverty of the inhabitants of certain sections of it. In certain parts of all large cities there are to be found a number of people who are insufficiently fed and clothed, and who are huddled together in such a way that cleanliness, decency and morality are difficult or impossible to obtain. Here congregate the idle and intemperate, the tramps and loafers of the country, the hereditarily indolent and vicious classes. Mingled with them and living under much the same conditions are many honest and industrious people, who are living from hand to mouth; the daily wage earners to whom sickness means recourse to the public hospitals and loss of means to earn their own subsistence. The death rates in these quarters are fifty to one hundred and fifty per cent. greater than those of the better class of population; the average duration of life is from ten to fifteen years less by reason of such poverty and squalor; a large part of their sickness must be relieved by public charity, and one-third of those who die among them must be buried at public expense.

"The problem of how to improve the sanitary condition of these quarters, to prevent the increase of foul, damp, dark, and overcrowded dwellings and thus lessen the burdens of the community, without still further pauperizing the people and attracting to the place other vagrants and criminals, is one of the most serious that confronts modern civilization and municipal government.

"It is easy to prove to any intelligent business man that high death and sickness rates in a city imply heavy demands on the public purse in the maintenance of hospitals and other charities, and also to show that an abundant and pure water supply, clean streets, good sewerage, and good and well enforced building regulations, are among the best means of lowering these death and sickness rates."

The foregoing quotation suggests a conviction which has long been forced upon my mind, that in all our sanitary work, both in municipal sanitation and in quarantine, we are working at the wrong end of the line. We are treating symptoms instead of the original cause of disease, and both for sociologic and economic considerations it would be far better to change the point of our attack.

Let me illustrate by the quarantine methods *heretofore* in vogue, and those *now* and in the *future* to be utilized in the suppression

of an epidemic disease such as yellow fever. When yellow fever appeared in a given locality under the old dispensation shot-gun quarantines were established by near and remote localities having any possible communication therewith. The press dispatches announced that "Podunk," evidently priding itself on its vigilance, "has quarantined against the world," and other communities, not to be outdone by Podunk, followed suit. I do not mean to ridicule these measures, but how much wiser is the method now enforced of concentrating the restrictive efforts in the *neighborhood* of the *epidemic,* and how much wiser still will be those provisions of the near future which will enable any community, by reason of its good sanitary condition, to look with comparative equanimity upon the chance introduction or outbreak of a contagious disease!

And in our municipalities we build large public hospitals, and establish other charitable institutions for the reception of the people whose unfortunate condition is attributable in large measure to the unsanitary conditions which our municipal governments allow to persist. As an economic measure, therefore, as shown by Dr. Billings, it will in the long run be *profitable* to spend more upon sanitation; and from a sociologic standpoint the advantages of this policy will be no less marked, for it must have occurred to most of my hearers in their hospital experiences that the greater the number of charity hospitals that are founded, the greater will be the number of people who are willing to become the recipients of charity; and that while charity is to be commended, the zeal manifested therefor may, after all, bring unfortunate results, for "zeal without judgment is a fault, even though it be zeal unto good."

Another strong appeal for sanitation lies in the promise which it would give of getting rid of quarantine. The time is at hand when we must consider the necessity of ridding ourselves of these restraints upon commerce, of holding a ship, with its valuable cargo and eager passengers, in quarantine because some person is aboard who has resided in a filthy section of a foreign port, and has brought with him an infectious disease. For these diseases can generally be traced to the overcrowded and otherwise insanitary sections of a city, the sections which, as I have before stated, should receive our first consideration. And the rich man held on board a steamer in the upper cabin because of infection aboard his ship in the steerage may reflect that his detention is due primarily to the faulty sanitation of some miserable portion of some

foreign city; and he receives thereby a demonstration of his personal interest in these conditions.

It is an interesting matter for conjecture—what would be the effect upon the prevalence of contagious disease if there could be a complete wiping out of all slums and low tenement house districts in all our cities. It matters not that an epidemic once started may prevail as violently, or more violently, in the better portions of a city, and that cleanliness and sanitation may then have but little effect upon its progress. The fact remains that for the perpetuation of these diseases among the people filth and bad environments are essential, and when we reflect how easy and natural is the upward gradation of infection, how readily, through successive grades, it may ascend the social scale from the lowest to the highest, the direct and personal interest of the wealthy and more intelligent classes of a community in the condition of the poor and ignorant becomes manifest. The greater danger of contagious disease among the poor is recognized in the present U. S. Treasury quarantine regulations, providing for the inspection of vessels at foreign ports bound for the United States. These regulations require, under certain circumstances, the inspection of the steerage, but not of the cabin passengers. We have made a class distinction, notwithstanding our democratic ideas, but the regulation is based on knowledge. It is a recognition of the fact that contagious and loathsome diseases are more apt to be prevalent among the poor, not simply because they are poor, but because they have been crowded and prevented from living under as good sanitary conditions as the more favored classes.

That good sanitary environment, enhancing the general health, is the best means of eliminating contagious disease, is illustrated by a conversation which I have had within a week with the Director of the Hygienic Laboratory of the Marine Hospital Service, Dr. Rosenau, who has just returned, after a prolonged period of study and investigation in the Pasteur Institute in Paris. Upon inquiring as to the latest phases of scientific investigation and the trend of thought at this great intellectual centre, among other matters, he stated that there seems to have arrived a period of pause in bacteriology, or at least a spirit of inquiry as to the true relation of microbes to the diseases of which they have been considered the special agents. Dr. Rosenau's statement is as follows:

"We have lately been compelled to modify some of our notions of the causes of contagious and infectious diseases. After the brilliant discoveries by Pasteur and Koch, it was thought that

the presence of the pathogenic microbe organism was like the bite of a venomous snake, surely poisonous. But now we know that there are other conditions beside the presence of the microbe necessary to produce disease. Many people go about with virulent cholera vibrio in their intestinal canal, yet they are not sick. have pneumonia. Why? Because their cells are vigorous enough to prevent the diplococci invading the lungs, but put such a person under bad sanitary conditions, or depress his vitality, and the microbes are not phagocyted—they invade the lungs and pneumonia and death follow.

"The same, to a limited degree, occurs with the bacillus diphtheriæ.

"In times of cholera epidemics men go about with living, virulent cholera vibrio in their intestinal canal, yet they are not sick. Why? Because the conditions for the production of the cholera toxins are not favorable—there is no abnormal flora in their intestinal canal. But let such a person eat poor and tainted food, or derange his digestion through indiscretion or evil sanitary surroundings, and the disease results.

"Many people live a long and active life with tubercle bacilli *encysted* in the apex of one lung. As long as they have plenty of fresh air and sunshine, and good sanitary surroundings, they remain well. But give such a person poor food or bad sanitary surroundings and see what happens. The battle going on between the bacilli and the cells results in a victory for the bacilli. The cells die and the victorious bacilli spread havoc through the lungs. We, therefore, have a scientific proof of the sense of the old-time notions of the old-fashioned doctors, who taught the value of fresh air and sunshine, of good food and exercise, of cleanliness and dry dwellings, and we find that the conditions of health which result from such good sanitary conditions are, after all, among the very best preventives against infection."

Another good effect of sanitary excellence would be to obviate municipal deception, either in the concealment of the existence of contagious disease or by reports giving a sense of false security to other communities. This subject is one which time will not permit me to discuss, but was treated of at some length in an address which I had the honor of delivering before the Social Science Association in Washington last May. I will simply say that the greater the neglect of sanitation, the more pronounced the disease-bearing factors of a city, the more sensitive does it seem to the acknowledgment of the presence of contagion, the more

determined does it become in outright denial. It is thus seen, and it is by no means a matter of imagination, that municipal morality is affected by the municipal sanitary status.

In the sanitary progress of the new century, it has occurred to me, there must be developed new classes of individuals in sanitary affairs. To-day every physician is considered, in a sense, a sanitarian; then there are the professional sanitarians, represented chiefly by those holding sanitary offices; but there are very few men to-day engaged in legislation who give any thought to *sanitary* legislation. We need a class of men who are versed in the law, who are skilled in *framing* laws, and who are familiar with the difficulties and methods of securing their enactment. The *average* doctor or sanitarian is as a child in these matters. Impressed with the importance and nobility of his cause, he becomes oblivious to the sentiments or even the rights of those affected unfavorably thereby. The same influences which seem to make of the doctor a poor man of business seem to make of the average sanitarian a poor man for legislation. So that it seems to me, at least in the United States, it will be necessary in the development of the ideal sanitary legislator to look for him among the lawyers rather than among the physicians. There is no reason why a good lawyer should not become adept in sanitation. I believe it to be more difficult for a good doctor to acquire legislative wisdom.

Another class of men to whom we should look for aid are the men of extreme wealth. I believe their attention should be directed to the vast amount of good to be done by the employment of their capital in backing up sanitary improvements. The number of great fortunes possessed by individuals in our several republics I have not had the opportunity of learning, but they are numerous; and, so far as I can judge, their possessors, at least a large number of them, are imbued with generosity and a desire to utilize their great wealth for the public good. Witness the large number of universities founded by wealthy men, the public libraries, and other institutions, erected or endowed by them; the contributions which they make in times of great calamity and in ordinary times to all charitable undertakings.

The methods by which they may assist in public sanitation may not be so obvious or numerous as other methods of advancing the public welfare, yet the influence of a man of great wealth could be distinctly felt in the advancement of sanitary legislation and in the perfection of sanitary administration. Moreover, the use of

large *capital in the improvement of the dwellings of the poor* appears to me to be as sensible and noble a method of the employment of capital as can be found. It has been a matter of surprise to me that the attention of our wealthy men of philanthropic impulse has not been more frequently thus directed. The Mills buildings in New York in a measure illustrate this idea, and I doubt not that a proper inquiry into the subject would develop other illustrations. But the advantage which individual capital enjoys over municipal government in the improvement of the dwellings of the poor lies in the difficulty experienced by the latter in condemning and destroying unsuitable tenements. Capital can *purchase* them and erect good buildings in their stead. This is illustrated by the history of the Sanitary Improvement Company of Washington, a company formed, and now being successfully operated, for the erection of suitable habitations for the poor, with less thought of profit than of public benefaction. As originally outlined, the scheme included a condemnation by the Commissioners of the District of Columbia and a destruction of the condemned unsanitary buildings, and the erection in their place of buildings by the company, though, owing to legal difficulties, the necessary legislation for destruction has not yet been enacted.

In a recent press clipping I have read that statistics just compiled show that during the year just past contributions to educational, religious and charitable objects and institutions in the United States have amounted to almost sixty-one millions of dollars, donations of less than one thousand dollars not being included in this summary. The article further states that this showing seems to indicate that there is a growing disposition to make philanthropy a partner to prosperity, a tendency to give helpfully instead of pauperizing men by benefactions. But in the list of these benefactions I see no mention of purely sanitary gifts or endowments, and to my mind it seems a reasonable proposition that more practical and beneficial results would have been obtained if this sixty-one millions of dollars, instead of being expended upon educational, religious and charitable institutions, had been expended upon reclaiming the slums, and in the purchase and destruction of rookeries, with the erection in their stead of modern sanitary tenement houses, and that, too, even though the money had not been expended outright as a gift, but as a safe though moderately paying investment.

The need of sanitary tenements has been brought to the front by the recent agitation and widespread movement for the sup-

pression of tuberculosis. In a pamphlet upon the tenements and tuberculosis, by Dr. S. A. Knopf, of New York, appears the following statement: "The present condition of the tenement houses in this city is so serious that the evils arising therefrom are a distinct menace to the welfare of the community. There are at present over 44,000 tenement houses in the old city of New York, and new tenement houses are being erected at the rate of about 2,000 a year. These are, in many respects, worse than the old buildings erected thirty years ago. They are badly constructed, and so planned that many rooms depend for their light and air entirely upon long, narrow, dark air-shafts, which, instead of giving light and air, are merely stagnant wells emitting foul odors and diseases."

It is true, gentlemen, that restrictive legislation may be enacted, but in view of all the foregoing facts, can there be found a more useful method of employing great individual wealth than in the removal and the prevention of the erection of such houses by the substitution of those properly constructed?

In a recently published article by Charles R. Henderson, professor of sociology in the University of Chicago, on the spirit of modern philanthropy, the writer states that "philanthropy has taken a wider and nobler view of its mission. It has become preventive and educational." He quotes the language of Miss Carpenter as follows: "A hospital cannot cleanse a poison-infected district, nor diminish the constant supply of patients from an undrained and malarious locality." He further says: "It is well to remove the weak and tempted from a bad environment; better still to improve the environment. It is well to go down to the folk-swamp and rescue one here and there; better still to drain the cesspools, improve the tenements, prevent adulteration of food and drink, inspect factories and compel the use of devices for averting accident and disease. The wall at the top of the dangerous precipice is worth far more than an ambulance at the bottom."

Since the above lines were written I have read a letter from a special correspondent (Marshal Lord) of the Washington "Evening Star" of January 19th, showing the reformatory work of this character now going on in London, which should certainly stimulate all American municipalities to efforts in the same direction. The writer states: "Every American city big enough to have one of those municipal sores called a slum will doubtless be interested in the huge experiment London is undertaking. This is nothing less than the expenditure of ten millions of dollars in the wiping

out and rebuilding the homes of about forty thousand people. A further programme that means the expenditure of another ten millions is now being discussed, and, after these projects are well under way, new schemes will be planned to the same end and more millions spent until the necessity for spending money in this way in London shall have disappeared and the city have become a landlord on an unprecedented scale. To-day the housing problem is the worst that London has to face, but her powerful County Council, which has done several rather remarkable things already, and which has practically unlimited wealth to draw upon, has determined that overcrowded, insanitary, and slum areas must go. The County Council has already attacked, razed and rebuilt one of the worst slums in London. Several other notorious ones are now being torn down, and still others are doomed. Medical inspectors in the County Council's employ are penetrating into the city's filthiest corners and condemning them. The wretched creatures who swarm in them are paid a small sum of money and turned out, after which the slum comes down. The 'before taking' phase of the council's heroic remedy is a mass of closely packed hovels, squalid, unlighted, and unventilated, reached through grimy, winding alleys, in which the police dare to go only in force. The 'after taking' is blocks of trim cottages or apartment buildings, each separated from the other, equipped with literally every modern convenience, including a perfect system of drainage and every essential for cooking. The apartments are well lighted by day with large windows; at night either by gas or electricity on the slot system, where a penny dropped in produces gas for six hours. These model dwellings, moreover, are to rent at prices which even very poor people can afford to pay, and are immediately tenanted to their full extent. So far, on workingmen's homes of this pattern that occupy the place of former slum districts, the London County Council has spent a little over three million dollars. It is now building houses which will cost over one million five hundred thousand dollars, and to clear the new districts, which have been condemned and which are to be rebuilt, will cost five million five hundred thousand dollars more. The houses already built accommodate more than ten thousand people. Those now building and those arranged for will give dwellings to thirty thousand more. They will be finished and occupied in five years from now.

"The second scheme which the council is laying out takes another way of curing the same disease of overcrowding. This is

by acquiring tracts of land in the country just out of London, building model dwellings there and connecting them with the working centres of the city by light railways. This will probably cost ten millions more.

"The council began to rehouse on a modest scale in 1883, but the importance of its work to-day lies in the dimensions to which it has grown and its great promise for the future."

It is a significant fact, happily recalled at the present time, that the new king of England, Edward VII, was identified with the inception of this work. His maiden speech in the House of Lords in 1884 was in support of a motion in favor of the better housing of the poor, and he was subsequently one of the commission appointed to consider the matter.

Gentlemen, representatives of the Western Republics, it is thus seen that our brethren of the East are already in the field. Why stand we here idle? Shall we in our newer territory allow ourselves to be surpassed in these matters by older governments, less democratic than our own, *less dependent upon the will of the people?*

In the foregoing I have endeavored to show that public sentiment, law and administration are the most important factors for the attainment of our standard of sanitation.

One word more with regard to administration. The health officers selected under State or municipal law are too frequently subject to political change. An experience of one term of service is generally necessary to sufficiently acquaint the health officer with the duties of his office, and while political changes in other offices may be made possibly without injury to the public service, the same cannot be said with regard to an officer of the public health. He should be selected, also, solely on account of his ability or special adaptability for the position, and while every American citizen may be expected to be a politician, in a certain sense, the health officer should be one who is not devoted to politics. And here is where the great body of the medical profession can exercise a salutary influence, by taking an active interest in these appointments, insisting that men of character, of education and reputation should receive them, for it is the duty of the profession to uphold the health officer in the performance of his public obligations. The health officer and the boards of health should command the respect and receive the support of the practitioners of medicine, whose influence in this direction is all-powerful.

One word at this point with regard to sanitation and politics. The city of Washington is sometimes referred to as typifying the highest order of sanitary equipment and administration, and when it has completed its sewerage system and established its water filtration plant it will be a model city. But, it may be argued, it is a model city because, unlike other cities, it has no local politics. This is true, but if municipal politics seem to *interfere,* as they often do, with sanitary progress, it but serves to demonstrate a reason, in addition to many other reasons, why the best men should go into politics.

Now, in the beginning of this paper I stated that municipal cleanliness and sanitation is not a field for the National Government, but belongs distinctively to the States and municipalities. Doubtless there is suggested to you, as to myself frequently, the thought of the National Government enforcing municipal sanitation. Speaking for the United States, under our constitution it is impossible. Nor with our ideas of self-government is it desirable. A weak leaning upon the National Government in ordinary matters affecting the people of a State or city is a thing to be avoided as lessening the feeling of municipal and personal responsibility for good government. The general government does not go into cities and say what kind of reservoirs they must have, how their sewers shall be laid and their garbage disposed of. These are left to local governments, which are just as capable for these measures as they are for managing their own police and fire departments.

Yet in the exercise by the general government of its right to prevent the introduction of contagious diseases from foreign countries, or the spread of the same from one State to another, I can foresee the possibility of such national action as may, without objection, have an influence on the sanitation of cities. The sanitation of seaport cities which habitually breed yellow fever, with a view to eliminating this disease, which interferes so seriously with commerce, is being considered by thoughtful men interested in commerce, sanitation and diplomacy.

There is no one disease which interferes so seriously with commerce in the Western Hemisphere or causes greater panic than yellow fever. The interdependence among nations in the efforts to get rid of this disease has become strikingly obvious, and illustrates the unity of interests of the nation in sanitation.

An inquiry into the sanitary conditions in the ports of the Western Republics will show with regard to many of them a

woeful sanitary condition, a neglect of the first principles of sanitation, and either faulty or entire absence of quarantine protection of one city from another. The commercial relations between these places are each year becoming more intimate, and through correspondence and conversation with representatives of the Central and South American Republics, I learn that the same apprehension which is felt by the United States each summer is experienced by all. All or nearly all of our republics have suffered in their commercial and business prosperity through the visitation or threatened visitation of yellow fever, and I have been surprised by the instant approbation with which all with whom I have spoken have received the idea of an international agreement looking to the sanitation of such seaports as are habitually infected with yellow fever. That yellow fever can be rooted out of an old endemic focus, I believe; but to demonstrate it is not an easy matter. I have endeavored within the past two years, through special reports from the United States consuls, to collect facts showing the relation between sanitary improvements and the prevalence of yellow fever in the principal fever ports of the tropics, but the results are as yet undeterminative. I believe, however, we have one notable illustration of success in Santiago, long known as a yellow fever port, but where the measures adopted by General Wood and the medical officers of the army were so radical and thorough that no yellow fever now prevails or has prevailed during the past year in that city. I feel confident, too, that in due course of time, and that before long, yellow fever will be made to disappear altogether from Havana. The general death rate has already been reduced, according to Major Howard, from 46.71 per thousand—the annual average for nine years—to 24.40 per thousand in 1900. Reasoning somewhat by analogy, we should be able to exterminate yellow fever from a given locality. A year ago last July it appeared in the National Soldiers' Home, Hampton, Va., where there were 3,500 veterans of the Civil War, but it was stopped, and that, too, quickly, with a record of 45 cases and 13 deaths. In June, 1896, it appeared at McHenry, Miss., and in 20 days was entirely suppressed, after the occurrence of 20 cases in all.

In eliminating it, however, from a city or locality where it has prevailed for many years, there are four provisions which must be complied with: First—Effective sanitary administration. Second—Good sewerage and water supply, soil drainage and paving.

Third—Sanitary engineering of harbors. Fourth—The destruction or scientific disinfection of houses where the fever has prevailed. In Havana the first of these requisites has been and is being accomplished. The city is clean on the surface. The sanitary administration is excellent, and measures are already under way for securing the second requisite of good sewerage, drainage and paving. I do not know that it has yet been determined whether sanitary engineering is necessary with regard to Havana harbor. But any harbor in the tropics which receives sewage, and is so landlocked that it becomes a cul-de-sac, must be subjected to such engineering as will cause a flow of its waters freely to the sea. But even when all this is done, yellow fever will still prevail unless the fourth measure is enforced, namely, the destruction of old infected houses, and the thorough scientific disinfection of others too good to be destroyed. In one tropical city a few years ago much stress was laid upon the good results following sanitary improvements of the harbor, but their improvements went still further, namely, to tearing down a large number of old houses, which was immediately followed by an unusual outbreak of yellow fever. In other cities, I am informed, millions of dollars have been spent in improving the sanitary conditions, yet yellow fever prevails from time to time, and why? Because the houses are infected, and have been for a great number of years.

This brings us to the question, have we a simple and efficient means for a scientific disinfection on this broad scale? I believe that we have. To the Marine-Hospital Service, which has had so large an experience in the post-epidemic disinfection of cities and towns, the thought of a simple, clean, non-injurious, inexpensive, yet thorough disinfection of houses, after its experience with the carting around of steam chambers, the burning of sulphur, the washing down with bichloride solution and carbolic acid, and meeting the bills afterward presented for ruin of or damage to property—the thought comes as a welcome relief.

A few years ago, through the inventive genius of one of our officers, we believed we had a formaldehyd lamp which met every requirement, but experience demonstrated certain defects which caused its temporary abandonment. The intelligent mechanic who constructed the lamp, however, has so improved it that thus far it has stood every scientific and practical test to which it has been put, and I hope and believe that in this lamp we have an efficient, simple and safe method of evolving formaldehyd gas of a strength to insure a thorough disinfection of houses and public buildings.

I mention this matter as one of encouragement in the idea of eliminating yellow fever, under the terms of the fourth requisite which I have mentioned, from cities usually infected.

The plan of international agreement which was outlined in an article by myself in the "Forum" for February, 1899, contemplates a convention to be composed of public sanitarians, civil engineers and financiers, whose duty it should be to prepare a treaty providing for the examination of the chief yellow fever ports by a commission representing the republics concerned. Each country should obligate itself to put into effect the measures recommended by this commission, or measures of its own which should meet with the commission's approval. Since obligations without penalties would be worthless, the treaty should provide that if after a sufficient time these improvements are not made, each of the other nations interested should impose such discriminative tariff or tonnage tax or quarantine restraint upon the offending nation as would cause it in its own interests to comply with the terms of the treaty.

Since the publication of the "Forum" article, I have conversed upon the subject with a number of the representatives of the Central and South American Republics, and with representative public men of our own country, and, without exception, all have pronounced the idea both valuable and practical.

If this measure should become an accomplished fact, think of the stimulation which, through international influence, would be given to municipal sanitation everywhere! Dr. Kober, in his excellent address on the Progress and Achievement of Hygiene, gives in detail the beneficial results of the sanitation of European cities. In providing for sanitation of seaports on account of yellow fever, the cities would undoubtedly benefit with regard to other diseases, and there is no doubt that as a result their commercial prosperity would be so enhanced that other cities would take notice and profit by their example.

Standing on the threshold of the twentieth century and looking forward to its achievements, the foregoing thoughts appear to lose the elements of doubt which may at first seem to attach to them, particularly when we look back upon the achievements of the last century in medicine, in surgery, and in sanitary science. And when we study the achievements of other centuries of the past, and see how they have been filled with the more primitive struggles for individual and national freedom, with the evolution of physical and mental science, with the development of architec-

ture, painting, sculpture and literature, it would seem that the next great cause pressing for agitation, both for the amelioration of unhappy conditions and for the further advancement along the lines of previous study and development, is the cause of sanitation. It is the next step for progress in the destinies of man, for "elevation in the scale of being." For further intellectual and moral advancement, sanitation is indispensable. Progress in other matters will, in a measure, depend upon it. The movement has already begun. Witness the sanitary benefactions of George Peabody in London thirty-eight years ago, and the efforts of the London County Council, as previously narrated, and similar work in Liverpool, Glasgow, Paris and Brussels; the valuable reports of the New York Tenement House Commission of 1894, and the labors of the present commission; the reports of Surgeon-General John M. Woodworth, M. H. S., to the International Medical Congress in 1876; the resolutions of the Conference of Sanitary Officers at Montgomery, Alabama, in 1899, and of the American Public Health Association in 1896; the report of the Department of Labor of the United States upon the investigation of slums, under the authority of act of Congress; and the innumerable contributions upon these subjects to the daily and medical press. All the above relate to the subjects which have just been under discussion, and the time has come for more positive action.

The twentieth century will certainly demonstrate the brotherhood of man, the fraternity of nations; and, not excepting even the Peace Conference at the Hague, can there be found a more hopeful sign of promise than is held out by sanitation.

Here is a common field upon which the nations may meet with unselfish and common purpose. Here is a policy which may well be put in the platform of political parties, and which, by requiring intelligent legislation, will bring the best men into local politics—a policy which will put a *rifle*-groove in the *shot-gun* now loaded with spasmodic municipal reforms, good government clubs and crusades against vice, and weld these latter into one missile of definite direction and force. Here is a means by which the rich may help the poor without further pauperizing them—a cause which, if advocated, will break down unnecessary class distinction; a promise of greater public morality; an assurance of higher life and greater health and prosperity to all, embodying in it the *summum bonum* of human existence, "the greatest good to the greatest number."

ENGINEERING WORK IN THE CITY OF HAVANA.

From "Engineering News," February 7, 1901.

The details of this work are fully given in the report of General Ludlow, which has recently been published in a bulky volume, containing numerous maps, diagrams and other illustrations, and from these details we abstract the following matter of most general interest to engineers, which is covered particularly by the report of Major Black.

Under the control of Major Black we find the surveys of the city and its suburbs, the departments of streets, street cleaning and parks, water and sewers, sanitation and renovation of public buildings and fortifications, and the department of the port. In fact, he has created a complete modern department of municipal works; and he reports to General Ludlow that this department is in excellent working order, and is fully up to the requirements of modern cities. While the Island of Cuba cannot yet afford a sufficient number of trained Cuban engineers, architects and men fitted to fill even the higher positions in the working force, it has been the policy of the department to give to the natives full opportunity for training in these several positions, and to promote them to higher office as they gain the required experience. In time they can thus manage their own affairs, without depending too much upon superintendents and foremen obtained from the United States.

In street reconstruction—one of the first improvements undertaken—the primary object has been to improve the sanitary condition of the city. The absence of a sewerage system has interfered greatly with the laying down of modern pavement, owing to the enormous cost involved in tearing up and replacing such pavement in the construction of the sewerage system contemplated. A considerable part of the city has been paved with Belgian and Boston block stone pavement, but owing to its noisy character parts of this pavement have been replaced by more modern street covering, especially in the neighborhood of public buildings; and the old stone has been relaid in other streets much in need of block pavement. Within ten months 47 per cent. of the macadam streets of the city have been entirely renewed; though, as limestone of widely varying character is the only rock found in the vicinity of Havana that is adapted to this construction, there has been difficulty in

securing a proper quality of broken stone in sufficient quantity for this purpose. The price now paid for broken stone, delivered upon the streets of Havana, is $2.30 to $2.35 per cubic meter.

Exclusive of sidewalks and curbing, the macadam streets built have cost from 60 cents to $1.32 per square meter, depending greatly upon the amount of grading necessary. In all nearly 29 miles of macadam streets have been renewed and 1.5 miles of unpaved streets have been macadamized. Of Belgian and Boston block pavements, 2.6 miles have been relaid in place and over .6 miles have been relaid upon other streets. This stone block pavement is practically confined to the business portion of the city, and the blocks themselves are very irregular in shape, badly rounded by wear and extremely slippery.

Small amounts of sheet asphalt, asphalt block and vitrified brick pavements were laid in previous fiscal year for the purpose of obtaining a comparative test of their values in a Cuban climate. The asphalt block was laid upon a cement mortar bed, and it has quite successfully withstood ten months' traffic, though it is badly worn at a point where the wheels of vehicles follow about the same path in turning a corner. The sheet asphalt pavement developed a number of small pits, and about 5 per cent. of the total has had to be patched by the contractor. The vitrified brick pavement was also laid upon a concrete foundation and a sand cushion, and it was provided with transverse and longitudinal asphaltic expansion joints. This pavement has given fair satisfaction, though it is very noisy as compared with the asphalt pavements. The average cost of the 62 miles of asphalt block pavement laid this year was $5.60 per square meter. The unit cost of brick pavement is not yet satisfactorily established.

The street traffic in Havana is very extensive and unusually severe upon the roadways. At some points as many as 2,500 vehicles pass in twelve hours; and the ordinary one-mule cart weighs 1,950 pounds and hauls a load of about 2,000 pounds on tires two and one-half inches wide. The country cart, which is used in hauling produce or merchandise to and from the city, weighs 4,000 pounds and carries a load of from 6,000 to 8,000 pounds on a three-inch tire. These latter vehicles are drawn by three to six mules, hitched tandem.

The Department of Street Cleaning and Parks cleans and sprinkles the streets, collects and disposes of refuse and takes care of the parks. It controls an area of 2,101,030 square meters in the

streets of the city and its suburbs; and of this area 238,331 square meters are yet unpaved in the city. This work has been thoroughly systematized by dividing the area into nine districts and employing a daily average of 536 persons in this work. Laborers are paid from 84 cents per day for the first month to $1 per day as a maximum; and cart service ranged from $4 to $3 per day. A total of 55,075 tons of street refuse has been already collected and disposed of, and comparative tables show great economy in the new over the old methods of doing this work.

Since December, 1899, certain streets in the old city have been sprinkled with electrozone, and this same material was used in disinfecting sewers, gutters and vacant lots, or wherever decomposing vegetable or animal matter were found. There is a house-to-house inspection and cleaning department; and in this sanitary work the worst of the old Spanish military hospital buildings were demolished and the woodwork burned and the stone disinfected. The grounds of these hospitals were also disinfected and regraded with broken stone and cinders. The night soil and the dangerous refuse is towed to sea and dumped.

A modern water department has been installed, having in charge all that relates to the supply and distribution of water. The Spanish authorities used cast and wrought-iron pipe for house connections, as a rule; and it has been found necessary to replace about 1,800 services, using a brass "corporation" cock and service cock and extra heavy galvanized iron pipe, lead-lined. The dearth of competent mechanics forbade the use of lead pipe in these services. The 400 flush-pattern fire hydrants installed were adopted on account of the narrow streets and sidewalks, but as the valves and their seats were in need of constant repair, 4-inch gate valves are being placed on the laterals connecting with the mains. All new hydrants have a controlling valve, permitting repair.

Since American occupation the water supply has been extended to Casa Blanca and Regla, suburbs of Havana, by carrying for the first a 6-inch flexible joint cast-iron pipe across the main channel in Havana Harbor. Regla is supplied by carrying the water 21,000 lineal feet from a 20-inch main, around to the bay opposite Havana. As much water was wasted by defective fixtures, a house-to-house inspection was commenced last summer, and out of 11,145 houses inspected 4,073 had leaky fixtures and 3,905 contained closets without storage tanks, the water being permitted to flow constantly in the basins. An ordinance is being prepared to

authorize the installation of meters where water is wantonly wasted. All government and municipal buildings have been supplied with modern water fixtures and sanitary plumbing, and an effort is being made to force house owners to do the same by a system of fines and close inspection.

As a result of surveys made, many of the old Havana street sewers were found to be obstructed by accumulations of deposits. As there were no manholes, the crown of the sewer had to be removed to clean these sewers. No general sewerage system was followed, and the grades were usually laid to meet the requirements of abutting owners; as a result, many localities are deprived of an outlet. Many of the old sewers are rectangular, with sides made of dimension coral rock, with disintegrated mortar in the joints. In some cases the bottom is earth only, and the grading is flat, as a rule, and the adjoining soil was contaminated.

Thorough surveys were made to obtain data for a modern sewerage system; and upon the completion of the preliminary investigation, Mr. D. E. McComb, M. Am. Soc. C. E., and Superintendent of Sewers, of Washington, D. C., was engaged as a consulting engineer. After devoting four months to the study of the ground, Mr. McComb prepared a sewerage plan as follows: He provided for sewers in all the built-up portions of Havana, with sewer dimensions providing for a population of 500,000. The sewage from all the higher ground was carried by gravity and with interceptor sewer lines to a central point near the harbor entrance; and the sewage from the low areas was to be conducted to a secondary station and then raised by pumps to the high-level interceptor. From the central station mentioned all of the sewage was to be carried under the harbor and to a pumping station on the other side of the harbor, and there lifted sufficiently to flow by gravity to a point of discharge on the coast east of Moro Castle. The plan also provided for storm water sewers where needed, but no sewage was permitted to enter Havana Bay. This plan was submitted to Mr. Samuel M. Gray, M. Am. Soc. C. E., but his final report and detail plans were not completed at the time of making the Ludlow report.

The report states that Mr. M. J. Dady, of New York, in 1895, submitted to the Spanish authorities a project for sewering the city, and sent in a modification of this project in 1897. Mr. D. P. Cunningham, Acting Chief Engineer in the absence of Major Black, reports as follows upon the commercial side of this project:

The original Dady project contemplated the collection of all sewage at a central point, the erection of a chemical reduction plant and a crematory for city refuse, and the discharge of the effluent into the bay. The modified plan of 1897 proposed three separate systems for the collection of sewage, storm-water disposal and subsoil drainage. The first system was to provide for 300,000 people, using 25 gallons of water per day, and this sewage was to be pumped through a pipe to a point 1¼ miles east of Cojimar, the collecting basin and pumping station being 7 miles apart. The sewage of near suburbs and that emptied into the bay by Matadero Creek was not provided for.

The specifications are very vague. The minimum width of sewer trench is prescribed, but no maximum is given; and the contractor would be entitled to receive pay for such quantities of material as he might see fit to remove. The great depth of the proposed trenches—13 to 35 feet—involved an enormous quantity of excavation, classified under six heads varying in price from $1.90 to $7.14 per cubic meter; but the project does not specify who is to make this classification. The quality of brick, cement and vitrified clay pipe is also unspecified. The estimate provides for 24,000 meters of iron force main, at $25.31 per lineal meter; but the quality, dimensions and weights are unspecified. The trench excavation, estimated for an average depth of 2 meters, calls for 48,000 cubic meters, at $3 per cubic meter. Many other items of excessive cost, superfluous work and freedom from restraint by inspectors are pointed out by Mr. Cunningham.

Mr. Dady's estimate for the sewer system is outlined as follows:

	Spanish Gold.
Estimated cost of sewers	$5,949,848.65
Subsoil drainage	48,144.00
Pumping plant	1,373,490.99
Rain-water sewers	1,036,387.68
Total	$8,407,871.32
Paving	4,192,583.21
Grand total	$12,600,425.85

These amounts include an allowance of 18 per cent. for "contingencies, engineering and profit." He proposed in the above to

lay 200,000 square meters of sheet asphalt pavement, 300,000 square meters granite block and to relay 245,000 square meters of old granite block pavement.

Payment for this work was to be provided for by the issue of 6 per cent. 50-year Spanish gold bonds, payment on these bonds to be guaranteed by a special mortgage on all the real estate of the city of Havana. The contract is so drawn that the contractor would practically have an unlimited time for completion by extending the five years named. The contractor was to remain in possession of the work for the lifetime of the bonds, and was to operate the sewer system for that period at the rate of $90,000 per annum. For pavement maintenance the contractor was to receive 10 cents per square meter, or $74,581.40 per year, until the maturity of the bonds. This arrangement would insure to the contractor a total receipt for such maintenance of more than $3,300,000, he being the sole judge of the amount of repair necessary, as no representative of the city is designated.

In commenting upon this proposed Dady contract Mr. Cunningham says that there is throughout this contract an entire lack of protection to the city with regard to inspection and acceptance of work, as to sufficiency, quality and satisfactory operation. As a result of the plans made by Mr. D. E. McComb, it is certain that a complete system of sewerage for the city of Havana can be constructed within an expenditure of $5,000,000, and this system would provide for 500,000 instead of 300,000 people, and also include important suburbs omitted in the Dady plan. As to paving, $3,200,000 would give to the city 800,000 square meters of modern pavement, which would meet the needs of the present time and cover more than the area specified in the Dady contract. Thus, an expenditure of $8,250,000 would give to the city a more complete and satisfactory system of sewerage and all the modern pavements now needed; whereas, the Dady contract, if carried into effect, would cost $13,000,000 in Spanish gold for the sewerage of only part of the city and an insufficient and badly chosen pavement, and in addition to this lay an annual charge of $165,000 for the maintenance of these systems, exclusive of interest, on the bonded debt. General Ludlow's report contains a complete analysis of the Dady specifications by Mr. Samuel M. Gray, which furnishes interesting reading.

Mention has been made of the use of electrozone in disinfecting sewers, etc. The report shows that during August-October, 1899,

inclusive, the output of the plant was 16,000 gallons per day of eight hours, the electrozone showing an average strength of 65 grains of available chlorine to the gallon. At the present time the output is 24,800 gallons per day, with an average strength of 150 grains, the plant being run fifteen hours per day. In ten months 5,157,800 gallons of electrozone were produced, costing $12,-656.07, including cost of materials, labor and royalty. The average cost per gallon is thus $0.002453.

TYPHOID FEVER AND ITS CONDITIONS AT EAST HAMPTON, L. I.—A PRACTICAL LESSON.

The Secretary of the State Board of Health some time ago requested Olin H. Landreth, professor in the engineering school of Union College, of Schenectady, and one of the State board's consulting engineers, to visit this village to investigate the immediate causes of the recent prevalence of typhoid fever in the village and to submit a report as to the steps which should be taken by the local authorities to stop the further spread of the disease and to stamp it out.

The professor's report, January 21, 1901, is:

The village of East Hampton is still unincorporated, and hence its sanitary affairs are under the jurisdiction of the Town Board of Health of the town of East Hampton. The village has a permanent population of a little over 1,000 people and a summer population of more than double that number, its proximity to the seashore making it an attractive summer resort for residents of New York City and vicinity, many of whom have homes in the village which they occupy for several months of each year. The water supply is from the ground water, found at depths varying with the surface topography from twelve to thirty feet. The greater part of the inhabitants use water from private wells excavated or dug to the ground water, while a small part of the population uses water from the public supply, owned by a private company, also taken from the same body of ground water by a large well or pump pit excavated nearly to the ground water level. There has been no opportunity to have examinations made of the public or private water supplies. Their depths below the surface would indicate a probable protection from surface contamination,

except through the well openings themselves, though the soil itself is quite porous in all parts of the village, except in the immediate bottom or depression of a small stream, where the soil appears to be impervious from muck and fine clay. In other portions of the village there are no visible signs of surface drainage, the water falling as rain disappearing by percolation into the soil.

There is no sewerage system in the village. The old style vault, in its usual condition, is the prevailing means of disposal, though several of the residents from New York, in the village and vicinity, have introduced the "Waring" system of subsoil disposal or so-called "irrigation." Some steps, unofficial in character, have been taken to secure a survey for a sewer system, though the problem of the final disposal, which appears to be a rather difficult and exceedingly important one here, has not been settled nor fully considered.

Although typhoid fever has occurred here for many years, the numbers of such cases have been no greater, but rather less, than in most places in the State, and the present outbreak appears to have had little connection with the normal cases. At least, the outbreak is sufficiently accounted for by other causes; and as the proposed remedial steps would be the same from whichever of the two causes, it is not worth while to spend much time in securing absolute certainty in the determination of the causes. East Hampton is but fifteen miles from Montauk Point, the site of the United States Army camp for the troops returning from Cuba during and following the Spanish war in 1898. Being of easy access by rail from the village of East Hampton, constant and general intercourse was kept up between the people of East Hampton and the camp. Many working people from East Hampton were employed in various capacities at and near the camp. Bedding, clothing and other articles from the camp were brought to the village, and two local hospitals were fitted up and maintained at East Hampton by the citizens of the village for sick soldiers from the United States camp. The first results of the intercourse, so far as it affected the health of the village, were numerous cases of tropical dysentery, which occurred during the fall of 1898. One case of typhoid fever also occurred during August, 1898, the patient having been at the camp previously. There was a long delay in reaching the final diagnosis of the case, during which time the excreta were thrown in the privy and afterward they were, during the continuance of the disease, disposed of by throwing in an old pig pen. The next

cases were situated about 500 feet distant and down the slope of the valley from the first case, and occurred in July, 1899, and were followed during that fall and early spring of 1900 by one or two other cases at the same point. Later in the season of 1900 several other cases occurred at points not very remote from the 1899 cases and within 600 feet of the site of one of the hospitals where several soldiers were sick with typhoid during the summer of 1898. A servant who worked at this hospital during the time the soldiers were there sick stated to me that the excreta were disinfected and removed daily and spread on the land outside the village. This was also the final disposal of the manure from the pig pen before mentioned, though the exact location of the land used for this purpose it was not possible to ascertain within the time at my command at East Hampton.

Nearly all the cases of 1900 are within 800 feet from this hospital and lie in all directions from it. The site of this hospital is on a gentle rise or hill above all the points where the disease has occurred in 1900, and the soil there is loose and sandy.

There is little doubt—whatever may have been the means by which the infection reached East Hampton—that it became established there by soil implantation and that it was disseminated from either one or both the 1898 centres, either through the agency of percolation into the ground water, from which all the patients took a part at least of the supply, or through the air, by the medium of dust blown by the winds. As the 1900 cases occurred rather compactly, it is not difficult to account for the spread of the disease, particularly as nearly all the physicians having treated cases there appear to have had full confidence in the immunity secured by the so-called disinfection of excreta and to have considered the ultimate disposition a secondary matter.

The majority of the 1900 cases have occurred in low situations, one important centre being a piece of low ground lying in the bottom of a broad, shallow depression, from which the drainage has been rendered very imperfect by the construction of the Long Island Railroad through or across the depression and the location of its only culvert—a cast-iron pipe—at an elevation altogether too high to permit proper drainage of this district. On the day of my visit the water was standing in a cellar of one of the houses in this district—the only one in the low portion having a cellar—at an elevation less than two feet below the general level of the ground in that vicinity. This district being low and very level and the

soil a marshy muck with some recent filling over it, and with neither proper drainage nor sewerage, the conditions around the house may readily be understood to have been quite unsanitary, particularly as this is one of the principal laundry districts for the village. These conditions were undoubtedly important predisposing causes or agencies in the typhoid outbreak or propagation in this district. A very unusual feature of the outbreak of typhoid fever during the season of 1900 has been its remarkable mildness. Of some thirty or more cases diagnosed locally as typhoid there has been not more than one death, and there is much doubt as to whether the final cause of death in that case was typhoid or not.

Concerning the matter of remedial action, I have to recommend that the local authorities be directed to take the following steps to stamp out the disease and prevent a recurrence, fully believing that, unless vigorous and prompt measures be taken, the disease will develop into an epidemic from the existing centres during the coming season:

(1) That plans for a complete modern system of separate sewerage and sewage disposal be prepared at once, and that these and all other preliminaries to actual construction be completed in time for the construction of the system as soon as the season will permit.

(2) That the local Board of Health, from its own inspections, or acting on the advice of an experienced sanitary engineer, shall determine what premises in the village and immediate vicinity should, in the interest of the general health of the occupants and of the public, be at once connected with the sewer system, and that the Board of Health enact and issue the necessary regulations and orders requiring the owners or agents of all such premises to provide the necessary water closets, water connections and house sewers, and to connect the same with the public sewer system as soon as the sewers of the latter shall be laid in the streets on which such premises are situated.

(3) That in connection with the previous recommendations the Board of Health shall have prepared, and shall enact and provide for the enforcement and inspection of, a code of sanitary plumbing and sewerage which shall govern all plumbing and sewering done in the village.

(4) That the local Board of Health, acting on its own inspections, or at the advice of an experienced sanitary engineer, shall determine what permises may safely be allowed the option of con-

necting with the public sewer system, or of reconstructing or improving their present privies or cesspools, and shall determine and enact rules and regulations for the proper and sanitary operation, maintenance and inspection of the privies or cesspools of all such premises as do not connect with the sewers, and shall enforce the same.

(5) That the local Board of Health order and enforce the immediate cleaning out of all privies at all premises where typhoid has occurred during 1899 or 1900, and the placing of the contents so removed in shallow layers not exceeding four inches in thickness, in trenches not less than one nor more than two feet in depth, the trenches to be immediately refilled with the earth removed therefrom or with other fresh earth or sand. Also, that the privy vaults so emptied be filled up level with the surface of the ground with fresh, clean earth or sand, and new locations for the privies be made. This work should be done at once and during freezing weather.

(6) That the local Board of Health provide a system of drainage by open ditches, or preferably covered tile drains, for the entire low district in which numerous cases of typhoid fever occurred during 1900, including the lowering of the railroad culvert, and, if necessary, to effect the complete drainage and lowering of the ground water in the district, then the lowering and straightening of the stream after it passes the railroad culvert.

(7) That the local Board of Health make or have made by an experienced sanitary engineer a critical sanitary examination of the surroundings of all wells at premises where typhoid fever has occurred during either 1899 or 1900, and of all wells near privies or places where the excreta from typhoid patients has been placed during 1899 or 1900; and that such local board order and enforce the permanent or temporary closing from use of all such wells as such sanitary examination may indicate as likely to be infected from such privies or places as above indicated. The evidence of chemical or biological analyses should be secured in the sanitary examination whenever the other evidence leaves the matter in doubt.

PRACTICAL POINTS IN RELATION TO WATER SUPPLIES AND SEWAGE DISPOSALS.*

By HENRY SOUTHER, Water Commissioner.

Only within a few years has the immediate danger lurking in water been appreciated. Clear and sparkling water is still, to many, the standard of excellence, yet such water may contain the most pernicious disease germs, whereas many turbid and discolored waters, offensive to the eye and nose, may be perfectly innocuous.

Human sewage is the vehicle by which typhoid fever, cholera, dysentery and other diseases reach water supplies, and yet, until recently, it has been emptied with scant consideration of neighbors, by conducting it into the nearest stream. The report of the Connecticut Sewage Commission aptly says: "Pouring filth into flowing water is a very slow and dangerous way of destroying filth, but a short and easy way to destroy pure water. An impression has become general that our waterways were designed by nature to carry all our sewage, and that centres of population have a prescriptive right to them for that purpose, but the fact that the riparian owner has a right to the waters of the stream unpolluted seems to have been, in some quarters, entirely forgotten.

This thickly settled locality is in such a condition that it is difficult to find a stream that is not dangerously polluted. There is, near by, a stream to which many look as a possible source for a new supply. Yet, to make that safe a small town must be wiped out of existence, or its sewage purified and the watershed controlled to prevent further pollution. The most inexhaustive water supplies, as great lakes and large rivers, are dangerously polluted and becoming more and more so each day. It is necessary to cover great distances to get sufficient and safe waters. Europe, not so fortunate in naturally stored water and in hilly districts, where it could be trapped easily, reached its limit long since, and resorted to the alternative, purifying polluted supplies by filtration. "In our own case," Mr. Souther said, "the question of expense is likely to enter as an important factor, as it appears that two equally safe supplies are at hand."

*Abstract of paper read at a meeting of Hartford Board of Trade, December 11, 1900.

Allen Hazen says: "The main point is that disease germs shall not be present in our drinking water. If they can be kept out in the first place at reasonable expense, that is the thing to do. Innocence is better than repentance. If they cannot be kept out, we must take them out afterward; it does not matter how this is done, so long as the work is thorough. Sedimentation and storage may accomplish much, but their action is too slow and often uncertain. Filtration, properly carried out, removes bacteria promptly and thoroughly and at reasonable expense."

Since 1887 there has been maintained in Lawrence, Mass., a State experiment station dealing with water supply and sewage problems. Its results include a valuable collection of facts as to the possibilities and the impossibilities. Lawrence furnishes a practical illustration of the possibility of purifying a polluted stream and making the water safe. It began to use river water for its city supply in 1876. Typhoid began to appear seriously a few years later, and in 1889 the typhoid deaths in Lawrence were 138 per cent. greater than the average for the State, and 61 per cent. greater than the annual average for Lawrence for the preceding eighteen years.

Hazen describes as follows the problem that Lawrence then faced:

"It is popularly believed that water purifies itself very rapidly in a running river. It does change in its chemical condition, but to show how persistent the bacteria of sewage are, even in large rivers, flowing long distances, some of the measurements taken at the Lawrence experiment station are herewith given: Taking the population of Lawrence in 1892 at 85,000 and the average daily flow of the Merrimac at 6,000 cubic feet per second, and assuming that 200,000,000,000 bacteria are discharged daily into the sewage from each person, they would increase the number in the river by 1,160 per cubic centimeter, or about 300,000 in an ordinary glass. . . . There is reason to believe that the bulk of these were harmless, but some of them were not. Fæces of people suffering from typhoid fever contain the germs of that disease. What proportion of the total number of bacteria in such fæces is injurious is not known; but assuming that one-fourth only of the total number are typhoid germs . . . it would put one typhoid germ into every glass of water at the Lawrence in-take."

The conditions necessary to destroy dangerous pollution by sewage are: (1) dilution; (2) time; (3) sedimentation, and (4) natural or artificial filtration.

The old theory that water purifies itself in running a certain distance has no adequate foundation, so far as bacteria are concerned. Some purification takes place with time, but its extent has been greatly overestimated. The quick-running river is as dangerous as the slow, because the time is short, and it lands bacteria in an active condition.

The death rate from typhoid is an accurate measure of the purity of the public water supply. American cities having unpolluted water supplies have comparatively few deaths from typhoid, though the figures never go so low as in Europe, where nearly all cities filter. The power of suitable filtration to protect a city from typhoid fever is shown by the very low death rates from this cause in London, Breslau and other cities drawing from sources greatly contaminated, and in which great reductions in the typhoid death rates followed the introduction of filters. Pittsburg, using raw river water, has a death rate of 127 and London, using filtered, a rate of seventeen.

The methods used for purifying are "continuous sand," "intermittent sand," and "mechanical filtration."

Springfield and Holyoke should purify their sewage before emptying it into the Connecticut River. Hartford could then filter the water of the river very rapidly, and have an inexhaustible supply safer than any unfiltered supply. Filtration of sewage offers more difficult problems than that of water. For large cities the question of sufficient land becomes serious. Chemical methods are having an exhaustive test in Worcester, and seem likely to fail, because of expense and incomplete purification.

Hartford is approaching a time when its sewage must be purified before emptying into the Connecticut. It is now time to consider separation of sewage and surface water in connection with all new sewer work. Massachusetts is ahead of Connecticut in solving many problems. Connecticut laws in regard to the State Board of Health and sewage are good as far as they go, but they lack vigor and definiteness. The Hartford Board of Trade can advance the interests of the city by urging action by the coming Legislature, extending the powers of the State Board of Health.

IMPROVEMENTS IN THE WAYS AND MEANS OF LIVING.

Prof. W. T. Sedgwick, of the Institute of Technology, Boston, in an address on this subject at the Marlboro, Jan. 3d, said, in part, that improvement had taken place, as compared with former days,

even in the process of birth—by the employment of skilled physicians and by the better development of woman under the improved conditions of living, which he proceeded to describe in an instructive and interesting manner, illustrating his points with many familiar facts as well as some newly stated.

The "ways" of living which had been improved may be scheduled as follows:

The care of infants and young children. Dwelling houses with good floors, instead of loam or straw with the accumulated filth of years; proper heating; larger windows and the new idea of verandas; ventilation, forcing good air in and bad air out. Streets cleaned instead of containing decaying refuse from dwellings. Clothing, cheap and plenty, of wholesome cotton or woollen. Footwear, especially rubbers and arctics, instead of the cowhide, for woodsmen and farmers. Frequent laundering, instead of washing once or twice a year in the richest families to show they had plenty of linen to last. Improvements of travel, with warmth, comfort, regular meals, etc.

The following he classed as "means" of living:

The meat supply, well raised in the West on the juicy grasses of the plains and stall-fed, instead of the worn-out ox. The cold storage system, whereby it was possible to keep and transport meats, fish, fruits and vegetables, and thus allow us to enjoy the products of the tropics the year round. Canning, instead of trying to preserve fruits simply by the use of sugar. These, he averred, had almost entirely obliterated the disease of scurvy, formerly so prevalent.

Butter, made sweeter, better salted and more palatable by the creamery system, so taking a great burden from the housewife. Oleomargarine, an important addition to our edible and palatable fats, and far better in every way than poor butter. Cheaper prices and better quality in coffee, tea and cocoa. Milk, improved by the better breeding and care of cows.

Prof. Sedgwick paid the most attention to the subject of water, and deemed it more important than any other. He said:

"In the matter of water supply we have got along wonderfully. The popular idea once was that the best source was the wells, but now we know that they are often in very undesirable places."

THE UTILITARIAN PRINCIPLES OF TAXATION, AND THEIR RELATION TO ALTRUISM.

By R. S. GUERNSEY, of the New York Bar.

FOUNDATION AND GROWTH OF THE SYSTEM.

The utilitarian principles of taxation claim that taxation should be applied in a system in such manner as to be for the greatest good to the greatest number of users of the articles or privileges taxed, and should be upon the users as far as possible; but bearing upon the necessaries of life in such manner as to be the least upon the prime necessaries that sustain common life, such as food, clothing and habitation, real estate (including air, water supply and sanitary care), streets, bridges for free passage, and lighting of streets, because all must use these; hence the burden of taxation for their supply or support, as the case may be, should be by general taxation, which latter should be least on the users of these necessaries of common life, which they are compelled to have.

The prime necessaries of life should be taxed at the minimum and the luxuries at the maximum.

One great difficulty to be encountered in this system is to decide by law what should be regarded as prime necessaries of life, for minimum or no taxation, and what should be considered as luxuries to be taxed higher, and the scale of graduation to be applied to each.

The prime necessaries of life are to be regarded as those articles which are of the most common and extensive use and indispensable to life, which comforts and luxuries are regarded according to their cost and not easily accessible to all alike.

The tax should be applied directly or indirectly, as may be the most expedient.

Occupations should be taxed or not, according to their use to the public and the profit that they yield to those that have them; also the number that have like privileges.

While it may be admitted that the prime necessaries common to life should be as lightly taxed as possible with a view to revenue, there will necessarily be a great divergence of opinion as to the extent of what are to be regarded as necessaries of common life,

and where the degrees affecting them shall end and where luxuries commence in perhaps the same class of supplies.

As to what should be supported by general taxation and free to all for certain purposes in a city, we can take as a starting point rural habitations such as are common throughout the United States. All the city public improvements and requirements in addition to those found in rural districts for the general welfare and public use free, should be supported by the public by general taxation in whole or in part.

We now have cities and communities at the present high standard of civilization that has for free general use orderly and well-kept streets, bridges, parks, free and commodious schools, libraries, hospitals, asylums and dispensaries for the sick and unfortunate, and almshouses that supply their patrons with clothing, food, water, light and fuel and careful attendants, and all necessaries for the comfort, health and welfare and protection of their patrons, and all persons are entitled to the protection of their life, liberty, property and honor at the public expense, in their own homes and in public places.

It is apparent that the taxes in rural and agricultural districts must be raised in quite a different manner from those in commercial cities, and those in manufacturing communities still differently from either of the above. While a tax mostly confined to land would necessarily be the most available mode of raising revenue in the former, because there is little else to apply it to but productions which are generally and properly allowed to be exempt from taxation, there is plenty of land with sparse improvements and the expense of the district is small, roads and bridges and schools being the main expenses. In cities more than 40 per cent. of the land is used for streets and parks. The habitations and improvements on the land are costly and productive of rents accordingly. While the occupations are numerous and profitable in cities, in rural districts they are few, apart from the farm laborer, which latter corresponds to the mechanic in cities, both of which occupations are always exempt from privilege taxation among us.

Taxation should not be on the few for the purposes of the many, neither should it be on the many for the purposes and uses of a few. There should be co-operation in tax paying, and where the expenditure is for the masses they should help pay for its support, according to their ability and means.

It should be founded upon making the exactions according to

the conditions as light as practicable and equal as to class, and also to allow a choice in the use of the article or privilege taxed, and to levy the tax and apply the revenue to the requirements of the public use, all according to "the greatest good to the greatest number." This is the utilitarian plan of taxation.

To make a paraphrase of this statement is to state that happiness is to be considered in the first place as permanent good as distinguished from momentary pleasure, and that general welfare is to be regarded as the desire and purpose of the greatest number of individuals in a community.

This principle includes the rule of taxation that it shall be imposed where it will be the least felt, and to have the minimum tax or free the prime or most used necessaries of life in their natural order, commencing at food, clothing and habitation; the maximum tax on the comforts and luxuries of life as they are cultivated or indulged in by the more wealthy, measured by the cost of the article or its use. The ad valorem to be the standard of the tax when imposed in whole or in part in each case where expedient in connection with the general use per capita of the article; the extent of the general use to be taken into consideration in determining how far it is a necessity of common life. The extent of liberty of the choice of its use is also to be considered—less tax where there is no choice. The natural order of the necessaries to sustain life must be regarded as the diverging point, commencing at food, clothing and habitation, and spreading as conditions differ. Comforts are of a degree higher than necessaries, and are those that are not in use by all persons and are not positively needed in life, although many are made happier by having them, and are miserable without them, and are in general use by all classes. Without some humanitarian end in view in the law imposing taxes, there is no check in the aberration of legislation in its efforts to obtain revenue for public uses.

The distribution of the greatest amount of happiness in connection with liberty of choosing in the community may be considered to be for its general welfare and greatest good. The details of taxation and its effects should have this principle in view, and it should never be lost sight of. Indirect taxation is preferable and more satisfactory, because it never seems to reach the party who bears it, and it is also small on the average and capable of being more diffused and may be borne by the users and non-users of the article taxed in some cases.

Every government has some system in obtaining revenue in whole or in part that is or was appropriate in whole or in part, and founded upon the economic conditions that existed or were supposed to exist when the plan was adopted. There is not any plan or idea that can be conceived of in regard to taxation that is not now in operation in whole or in part, and in combinations in some governments. The trouble is to combine the different plans in such manner as to be best adapted to the wants, demands and needs of a community and appropriate to the various conditions that exist and arise from time to time, and to eliminate those that are not appropriate or for the good of all.

These principles of taxation (the writer asserts) can be applied in as complete a system as can the science of government, both of which must be in harmony with economic and social conditions of a community or state and the system applied to an appropriate community. The result of this system in New York will greatly reduce the tax on cultivated and improved real estate, and will lessen taxes on property that now pays taxes; no tax on productions and manufactures, a tax on capital, a tax on privileges, a tax on business of some corporations, a tax on some corporate franchises, a tax on some public utilities.

The principles of this system of taxation can be found in operation more or less in every State and municipality in the United States at the present time. It has rapidly grown in this direction in crude examples during the past thirty years in the United States, and is now rapidly tending to a more just and appropriate distribution of tax burdens in the future that are increasing by the demands of public expenditures and diversified uses of public maintenance and supervision.

In order to further adapt this system of taxation in the State of New York, no radical change is necessary by sudden or disproportionate modes of assessment to such an extent as to immediately materially affect values or occupations. This is inconsistent with the utilitarian system of taxation. The changes can be gradual until the appropriate taxation for the conditions are reached in the several particulars where it is now lacking. The amount of the tax levy is to be about the same, more or less, in the aggregate, and we now know how and upon what property and occupations it is applied, and the amount thereof realized and required for State and local purposes. It need not be launched upon any community like the United States war revenue taxation

of 1898, necessary for the immediate purpose of a very large additional revenue. The total may be more or less than the preceding year, according to the requirements of the annual budget for State and local purposes, and applied accordingly.

These utilitarian principles have the same starting point that all moral and municipal laws have, which is that all persons are equally entitled to the benefit and protection of the laws. All are entitled to food, clothing, habitation and protection in personal rights. Some that have these in a degree must be taxed for them, while others in other degrees or not using them should not be taxed for any of them. Taxation and revenue from it should be to conserve individuals in life, liberty and the pursuit of wealth and the enjoyment that arises from it, and should be applied in a system appropriate to the particular conditions for that purpose.

The foundation of political economy is taxation. Governments must be supported and maintained by taxation and exactions of service for the protection of all. Although systems of government are wide and diversified, according to the whims and caprices of individuals and the climatic differences and habits of nations, the tendency of taxation or exactions for public use and purposes has been moving on more rapidly, in close company with liberty of the individual, and accordingly in the great line of utility as applicable to the conditions as understood by those who defined what those exactions should be and to whom they should apply. This shows that there is a natural law for a system of taxation that should be ascertained and followed in each community appropriate to it, and to the different periods and changed conditions which confront it from time to time by the range and diversity of subjects that arise.

Systems and plans of taxation, therefore, may become outgrown and oppressive, or worn out and inapplicable in one State or nation, and yet may be of the greatest value and means of prosperity in other times and in other nations, and may at one time have been found harmful and discarded, when at another time and in other conditions it will be of the most benefit and just and of utility. A nation or State may grow or shrink in such manner as to need a change in the system of taxation, and this may be caused by changes in its internal condition, as well as by its external—the condition of its neighbors, their relations and geographical and physical conditions, and how to make the most of them. Economic changes require changes in methods and systems of taxation.

The assertion of Malthus nearly a century ago, gathered from Adam Smith's observations, and Henry George a quarter of a century ago, that the rich are growing richer and the poor are growing poorer, and that population has a tendency to increase in a greater ratio than has the growth of production for the wants of many, may yet be true in India and China, and some other uncivilized portions of the world. It will be found to prevail greatest where the tax is confined wholly to real estate. It is not true among us or in the most civilized nations of which we know at the present day.

The Government of the United States and the State governments and some local municipalities within them are hampered by the constitutional restrictions and prejudices that were founded upon the teachings of a class of writers on political economy that emanated from Adam Smith, and were evidently without any forethought that any change in the economic conditions in modes of production would ever occur, and would sooner or later necessitate a change in the laws of supply and demand and policy of taxation, whether for revenue or for protection or benefit to any industry or foreign commerce. The sources of revenue for the British Government are now quite different from what they were when Adam Smith wrote, and the common and laboring and middle classes in England are much better off now, in comfort and the means of supplying and indulging their wants and comforts, than were the nobility and landholding classes a century and a half ago.

The improved means of obtaining accurate information regarding the social and business conditions and details of a nation, and of the various communities that compose it, are now carried on under government authority and inspection, and by societies and associations and by writers on special subjects to such an extent as to furnish to hand almost all that is needed for any purpose of legislation and reform. We can now get their measure and should cut to fit accordingly. It is to this that we are greatly indebted for the progress and reforms in legislation, and attempts to supply the wants and needs and efforts to improve the social conditions in all communities. Among these notable improvements is that in regard to appropriate taxation for local and for national purposes. We must look to these conditions for future appropriate legislation.

(To be continued.)

PRACTICAL HYGIENE.

REPORT OF THE COMMITTEE ON HYGIENE TO THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Your Committee on Hygiene respectfully reports:

To those especially interested in the subject of hygiene the events of the year last past afford substantial reasons for encouragement.

At our last meeting the topic of hygiene was prominently before this society in addresses, communications and discussions. During the year important hearings were held before legislative committees. The Senate passed a bill appropriating $150,000 for the establishment of a State sanatorium for the treatment of incipient consumptives, and, although the opposition in the lower house cut this appropriation to $50,000, they were unable to prevent the passage of the bill, which went to the Governor and was signed, thus enabling the closing year of the century to witness a sociological event of the first magnitude—the State of New York making the first step in the great cause of State prevention of consumption.

Time and opportunity to hear and weigh objections to the proposition that the State should lead in the cure and prevention of this communicable disease has but confirmed your committee upon the importance of the subject—the wisdom and timeliness of the action heretofore taken by this society, and the committee with all emphasis commend the principle to your fostering care, and once more recommend the necessary legislation.

The attention of your committee has been directed to another topic in local hygiene—closely related to the great question of consumption and perhaps only second to it in order of importance—the housing of the poor, particularly the poor of our chief city, the metropolis of all the Americas. In the city of New York this question of the unhygienic housing of the poor workingman has been the nightmare of sanitarians for more than half a century. How practical and important this question is we get an idea when we recall that two-thirds of the people of the city live in tenement houses. Many of these, without adequate air or light or space or

possibility of cleanliness, live under conditions so unnatural, so unhygienic that disease, poverty and crime in an alarming degree are the inevitable incidents of life. Your committee commend this matter of work for the better housing of the poor as a subject worthy of your warm and active sympathy and support—and with greater particuarity—because in this work, as in many of the instances of State medicine, prevention is so much easier, so much cheaper, so much more economical than cure. Your committee advise that restrictive ordinances as to the construction of buildings intended for the occupancy of more than three families be enacted and enforced by every municipality in the State; also that local health authorities be encouraged in more careful inspection and more fearless condemnation of those now known or believed to be a menace to our public health.

The State of New York annually expends some $25,000,000 in its various charities, and the greater part of this enormous sum is a penalty for our failing to protect the public health. Many think this is a speculative, a philosophic proposition. There was never a more intensely and exclusively practical proposition.

Your committee has also given consideration to the significance of the evil influence upon the public health of the two communicable diseases, gonorrhœa and syphilis, and advise that efficient steps be taken to protect our people from these diseases by bringing to bear upon them the principle of isolation, a principle of well proven effectiveness in the control of communicable disease from the days of Moses and the health ordinances relating to leprosy down to the placard of to-day, showing that there is diphtheria in this house.

To this end your committee invite consideration of the proposition: That, in view of the continued existence of the communicable diseases, gonorrhœa and syphilis, of the great influence of the former in the production of blindness, particularly in the newly born, and of sterility in our young men and of pelvic disease and sterility in our young women; of the importance of the latter as a many-sided and wide-reaching factor in working individual, family and racial degeneration, that it is desirable that these diseases be included in the list of communicable diseases, requiring notification and registry. That cities having boards of health take steps to secure the registry of all persons having the diseases named; and that such registration be lodged with the health authorities.

The intelligent conviction of the medical profession as to the relation of typhoid fever and impure water supply is bearing fruit. The cities of Albany and Schenectady, acting under judicious advice, have taken steps to replace an infected water supply with pure water, with the prompt and usual result of immediate and emphatic fall in the typhoid morbility and mortality. These cities need no more be classed with those of very high typhoid prevalence, like Alexandria and Cairo, but with those of very low prevalence, like Munich and Vienna.

The result in Schenectady seems most satisfactory and impressive. Previous to 1897 this city had the unenviable notoriety of the highest typhoid mortality of any city in the State, a State of many cities with discreditable typhoid records, but since stopping the use of infected water the years 1898 and 1899 have passed with the lowest typhoid mortality of any of the twenty chief cities of the State. This would seem a favorable occasion to invite your attention to the scandalously high typhoid death rate of the entire State as compared with that of many of the great cities of Europe, cities blessed with greater civic enlightenment, purer water supply and comparative immunity from typhoid fever.

The cities of Munich, Vienna, Hague, Berlin, Rotterdam, Breslau, Hamburg, Zurich, Amsterdam, London, Edinburgh and Warsaw are supplied with pure water and have an average annual typhoid death rate of less than 8 per 100,000 population.

The cities of New York, Yonkers, Kingston, Utica, Auburn and Rochester are those of this State having the better water supply and the lower typhoid mortality, the average of the ten years preceding and including 1899 being 20.66 per 100,000 population.

While Oswego, Buffalo, Syracuse, Newburg, Poughkeepsie, Amsterdam, Binghamton, Troy, Elmira, Watertown, Niagara Falls, Albany, Cohoes and Schenectady use or have used an infected water supply, and during the ten years preceding and including 1899 have had an average annual typhoid mortality of 53.71 per 100,000 population, giving a total of twenty New York cities with an average typhoid mortality of 37.18 as compared with twelve cities of Europe with a typhoid mortality of 8.

Here, perhaps, we may profitably remind ourselves that this is the Medical Society of the State of New York; that this society should represent the medical profession of the State, and that in sanatory matters the medical profession is the light of the civic consciousness, the inspiration of the civic conscience.

May we not resolve that, while the new century is yet young, the deliverance from needless typhoid fever which has been brought to the dwellers at Albany and Schenectady shall in like manner, by our unceasing diligence, be bestowed upon every inhabitant of the Empire State?

And, further, that it is sometimes desirable to consider our unworthiness, and that we go down into the valley of humiliation and look upon these tell-tale statistics of European and New York typhoid mortality and see them as they are, a conclusive demonstration of our professional inefficiency in preventive medicine, as compared with our more forunate brethren of Europe; that we ask ourselves why we have permitted and still permit this enormous typhoid death rate—this frightful loss of time, of energy, of money, of life—by the disease of all the communicable diseases the most easy of prevention? Why we are in sanatory efficiency, in preventive medicine so far below and behind our brethren of Europe?

Your Committee on Hygiene in making answer would remind you that the energy of the gun is never more than the potential energy of the powder burned in the discharge—that the profession of Europe brings to the attack of sanatory problems breech-loading rifles and smokeless powder, while we of the State of New York are but just beginning to see the first fruits of our long and discouraging crusade against the too long standing habit of infecting the medical profession itself, not with typhoid water or tuberculous milk, but with the more deadly infection, with the ignorant graduate of the incompetent medical college.

The sanatory problems of to-day will be mastered only by the use of the modern weapons, in the hands of men of the highest efficiency and competency—bows and arrows, totems and medals are of the past, not of the present century.

Again, the medical profession of Europe speaks with a single voice, while the people of the State of New York, where they should be encouraged, enlightened and led, are confused, disheartened and angered by a babel of voices from physicians, homeopathic physicians, eclectic physicians, association physicians, with osteopaths and Eddyites expected to-morrow.

To return to our military figure: The sanatory campaigns of the Empire State of the twentieth century will be efficiently, creditably, satisfactorily conducted only by a medical profession kept at the highest state of efficiency and competency by state examination and state license, and united at least for the purpose of

promoting the public health in the Medical Society of the State of New York.

It will be reason for thankfulness and congratulation when the time shall come for this unification of the medical profession, if the organic law of this society and of the county societies in affiliation therewith shall be found as now, of that simple, broad and catholic character under which honest and positive men, united by many common beliefs and aspirations, can agree upon essentials while they disagree upon that which is less essential or non-essential.

In conclusion, your committee may be permitted to observe that many signs indicate that the demands of the present century upon the science and the art of the hygienist are likely to be more trying, more exacting than those of the last. Competent statisticians confidently predict that before this century closes the population of this country will exceed four hundred millions of souls, and that our successors in the Medical Society of the State of New York will be responsible for the lives and health of a people nearly as numerous as the present population of the nation. History has demonstrated over and over again that hygienic problems increase in difficulty and perplexity as populations become more dense—as nations grow older, as wealth and luxury increase. History also abundantly attests the seeming paradox that those medical men are the more prosperous, the more blest who live and work amidst a people whose health does most abound—that the prevention of disease wins for the physician his highest emoluments, his chiefest honors.

The men to do this work must be men equipped with high personal and professional attainments, inspired by high ideals of duty and responsibility.

Respectfully submitted,

Henry R. Hopkins, M. D., Chairman; M. A. Veeder, M. D., John H. Pryor, M. D., H. L. Elsner, M. D., J. M. Mosher, M. D., George B. Fowler, M. D.

THE CHEMISTRY OF COOKING.

No woman can be said to be thoroughly proficient as a professor of housewifery until she understands something of the chemical elements of food, and the purpose they serve when taken into the system.

The use of chemistry in cooking is to teach how to supplement one kind of food for another which contains certain essential elements lacking in the first.

The human body has been likened to a machine, and like any other machine it is constantly wearing out. Every movement and every breath is breaking down cells and tissue, and this waste must be repaired to keep the body in normal working condition.

Food taken into the system has two offices to perform, the repairing of bodily waste and the supplying of fuel to keep the bodily heat up to 98 degrees.

Foods may be divided into three classes, nitrogenous, carbonaceous, and those in which both are united.

Nitrogenous food repairs bodily waste and builds up muscle and tissue, and carbonaceous food supplies fat, heat and energy to the body.

Of late, too, especial attention has been given to brain and nerve food, and it has come to be understood that if we would send forth from our homes into the world healthy, brainy men and women, well equipped physically and mentally for the battle of life, we must see to it that nerve and brain, bone and muscle, flesh and blood are all fed and nourished and built up, each with its own element of food. And thus the necessity of a balanced ration for the family is plainly seen.

When a knowledge of the needs of the body is supplemented by intelligent cooking, a wholesome, strengthening and nourishing meal is the result.

Cooking, too, loses its old sense of common drudgery when considered as a scientific process, and a cook who understands food values and the chemistry of every-day cookery has a perfect right to consider herself a scientist.

Of nitrogenous foods the richest is found in the albumen of eggs, lean meat, the curd of milk, peas, beans, oats and whole wheat flour, and many vegetables of which cabbage and onions rank first.

Carbonaceous foods are in two classes, the fats and the carbohydrates, both containing the hydrogen and oxygen. The fats include the fat of meat, cream, butter, vegetable oils and grains.

Carbohydrates include starch and sugar, sugar being cane sugar, honey and the sugar of fruits. The starches include the starchy vegetables, as potatoes, and cereals, as rice, corn, wheat and oats.

Milk is an almost perfect food. It strengthens the whole body. The cream gives us fat; the whey contains the salts and phosphates that strengthen the brain, bones and digestive organs, and the curd is the muscle-making, energy-producing substance. Eggs are rich in nitrogen and also sulphur for the brain and nerves.

But as a brain food fruit heads the list, containing as it does the salts and acids which are exceedingly wholesome, and which aid so materially in the digestion and assimilation of other foods, fish, eggs, oysters, lobsters, game and cheese.

From this it will be seen that the food that would best sustain and nourish a laborer in the open air would not be the best diet for a brain worker. A dinner of boiled salt pork and cabbage and whole wheat bread is nearly perfect for an outdoor laborer, as the cabbage is rich in nitrogen and the pork in carbon. Beans, next to meat, contain the most nitrogen, and are excellent food for laborers, and next comes oats, wheat and barley.

In cold weather the system requires more carbonaceous food, and in summer fruit, creams and vegetable salads should appear on the bill of fare.

And from this it will be seen that a knowledge of food elements and the needs of the human body is quite necessary in order to provide the different members of the family with a balanced ration of food best suited to their needs.

Every housewife should supplement her collection of cook books with a good work on the chemistry of food, and should make its contents a special study. Scientific stockmen have come to consider the balanced ration a necessity for the best development of animal life, and how much more so must it be for the best mental and physical development of human beings.—Augusta (Me.) "Journal."

BOILING-POINT OF WATER.—Most persons are apt to regard the point at which water in the domestic saucepan boils as a fixed quantity, unalterable as the laws of the Medes and Persians; but the cooks of a certain town in New Mexico have discovered that, in consequence of its great altitude above the sea, water boils there at 202° F. instead of at the normal 212°. This means that all the cooking calculations depending upon the heat of the water have to be revised. Everything from a breakfast egg to a sliver side of beef takes longer to cook than it does lower down in the atmosphere. Another thing which militates against the calculations of

the ordinary cook of the same town is that the air is so dry that vegetables are deprived of half their natural moisture, and must be left a long time in water to recover themselves before being cooked. In connection with this matter of the boiling-point we might observe that if our cooks at home could only realize the fact that it is impossible to heat the water in an open vessel above boiling-point, they would save much of the gas used in so many houses for fuel.—"Chambers' Journal."

NEW ZEALAND VEGETABLE NOVELTIES.

In Yates' "Annual" for 1900, I have noticed descriptions of several novelties in vegetables which should prove a boon to localities where droughts are not unfrequent, and especially to cabbage growers. A certain cabbage, called "Yates' aphis-proof cabbage," an Australian-raised variety, gave, notwithstanding the intense drought of last summer, good hearts and remained almost entirely free from aphis, while every other variety of cabbage was riddled by the pest. A better opportunity could not have occurred for testing its hardiness. After the heart is cut, it throws out a number of small hearts and loose leaves, all of which are tender and of a good flavor; and, as they rapidly reproduce themselves after cutting, a bed of these cabbages will keep a house in vegetables all through the summer and autumn. A cabbage that would really resist aphis and stand the hot, dry summers has long been a desideratum in Australian gardens, and it is thought that this variety will meet the want.

Another vegetable worthy of attention is an "African cucumber," a plant of the cucumber family from Rhodesia, South Africa. The fruit is 6 inches long, of a bright orange color, and covered with spines. Even for ornamental purposes the plant is well worth growing; but it may be also used as a fruit, the flesh being soft and juicy, and in appearance much like passion fruit. Eaten with sugar, the flavor is very similar to that of a rock melon.

Another novelty is called the "mongri," or edible podded radish. It is a new vegetable from Java, and is as easily grown as the ordinary radish, producing enormous crops of long pods, which are crisp and tender, with a delicious flavor. Persons who cannot eat the common radish because of its indigestible qualities should hail this new variety with pleasure. It makes an excellent salad; it is also delicious when boiled, having a delicate asparagus flavor.

FRANK DILLINGHAM, *Consul.*

Auckland, August 14, 1900.

SANITARY TREATY BETWEEN ARGENTINA AND URUGUAY.

The Department of State has received from the Argentine legation, under date of November 28, 1900, a copy of the sanitary treaty with Uruguay, which is translated as follows:

National department of hygiene—agreement between the president of the national board of health of the Oriental Republic of Uruguay, Dr. Ernesto Fernandez Espiro, and the president of the national department of hygiene of the Argentine Republic, Dr. Carlos G. Malbran, as to the treatment which vessels coming from ports infected with or suspected of the bubonic plague shall receive in both countries.

The president of the national board of health of the Oriental Republic of Uruguay, Dr. Ernesto Fernandez Espiro, and the president of the national department of hygiene of the Argentine Republic, Dr. Cárlos G. Malbran, having met in Buenos Ayres on September 19, 1900, with the intention of making the guarantees of sanitation more efficacious, granting to navigation and to commerce in general all those facilities compatible with them, have agreed upon the following terms for the treatment to be applied to vessels coming from ports infected with or suspected of the bubonic plague:

(1) To ask from the respective Governments the abolition of the present regulations in accordance with the agreement made November 15, 1899.

(2) The sanitary quarantine will commence to be enforced immediately after the departure from the port infected or suspected of the plague, provided that the vessels carry a health inspector who shall perform the medical inspection of the passengers and ship's crew and the disinfection of all the supplies taken on, operations which shall be repeated jointly with the disinfection of the vessel in the port of arrival. Said quarantine shall last five and four days respectively for vessels coming from infected or suspected ports.

(3) Vessels not carrying a health inspector will be submitted to the quarantine of five or four days according to their place of sailing, counting from the date of the medical inspection and disinfection which is practiced on their arrival.

(4) Vessels infected from having had or having sick among the passengers or ship's crew or epizooty among the rats on board must undergo ten days' quarantine, counted after the disinfection practiced on arrival.

(5) The effects of passengers and ship's crew will be submitted to disinfection, as well as postal parcels, every article of personal or domestic use, and rags in whatever condition.

(6) Articles or objects belonging to the effects of the passengers which, in the opinion of the authorities, may be considered as capable of transmitting the germs and are not susceptible of disinfection will not be admitted.

(7) Correspondence and freights will be admitted without any restriction.

(8) When a vessel arrives in port, although with the declaration of not having had any sickness during the voyage, still, if from certain circumstances there is occasion to consider it suspect, it will be submitted to the sanitary treatment that both corporations agree upon as necessary to be practiced in every case.

(9) The terms of this agreement can be modified, provided that the sanitary condition is substantially altered in the countries from which the vessels come.

(10) The measures indicated shall be applied after the promulgation of the ordinances dictated by the two corporations.

(11) These preliminaries will be submitted to the approbation of the respective Governments.

Additional article.—The Uruguayan and Argentine health authorities, in the event of appearance of a foreign disease (plague, yellow fever, or cholera) in either one of the two countries, will practice the disinfection, in the ports infected or suspected, of the vessels destined for the country unaffected, as well as of the effects of their passengers and ship's crew. This operation, controlled by the sanitary commissioners of the countries who take the precautionary measures, will constitute the basis of the sanitary treatment which is applied, without detriment to the supplementary measures of quarantine which are stipulated for each one of the said diseases. The terms pertaining to the present agreement must be used in case of the plague.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Removal of the Stomach.—M. Jules Bœckel has presented to the Académie de Médecine a very interesting report ("Gazette Hebdomadaire," January 13th) on a case of gastrectomy which was followed by cure. It is the fourth case known of the successful removal of the stomach.

"The operation for the removal of the stomach embraces," said M. Bœckel, "five essential steps which follow the opening of the abdomen.

"First. Section of the gastro-colic ligament, to free the lower part of the stomach at the larger curve.

"Second. The separation of the superior part of the stomach, holding the part to be divided between two intestinal forceps, the upper one placed above or immediately under the cardia.

"Third. The separation of the organ at the lesser curve by the section of the gastro-hepatic ligament.

"Fourth. The freeing of the lower extremity by section between two intestinal forceps of the first part of the duodenum.

"Fifth. The anastomosis of the cardiac portion with the duodenum.

"The union of the abdominal wall without drainage completes the operation."

The patient was extremely emaciated, having suffered during two years with the disease of the stomach. During this period a hard, movable tumor was felt in the sub-umbilical region about the size of an apple. After the laparotomy it was found that the tumor occupied the lesser curve throughout its whole extent, and that it was strongly adherent to the pancreas, from which it was necessary to separate it; the operation was finished without hemorrhage. The cardiac extremity was directly united to the duodenum. Twenty-three days after the operation the patient was able to sit up, and on the thirty-third day after her entrance, she left the hospital.

M. Bœckel thinks that gastrectomy is likely to have other uses than the treatment of malignant tumors. The case he presented

to the Académie proves that the stomach is not indispensably necessary for digestion. The patient digested well if food of a quality easily digestible was taken frequently and in small quantity.

NEURALGIAS AND THE X-RAYS.—A suit for damages was brought by Mme. Deverey ("Le Progrès Médical," January 19th) against a specialist, for injury caused by the application of the X-rays by an assistant of the doctor in the tribunal of the Seine before Judge Richard. The opinion of the court was a most interesting document, from which the following extracts are taken:

"While it does not properly belong to this tribunal to inquire if radiography may be employed or not in the treatment of facial neuralgias, nor can the court be the judge of the fitness nor of the efficacy of medicinal remedies to be applied to patients, nor can it interfere nor take part in the discussion of scientific questions, the examination and solution of which rest entirely on the conscience and the ability of the physicians who are treating the case.

"But the conditions may be quite different: there may be evidence of grave error in the case, of negligence or incompetence, or of want of experience charged against the doctor or his assistant, for whom he is legally responsible."

Then under such conditions the tribunal "officially" gives to M. Ogier, docteur ès sciences, who, after having examined the evidence and the facts connected with the case, will record his opinion on the following questions:

"First. Is there any possible relation of cause and effect between the application of radiography and the injury named in the medical certificate delivered to Mme. Deverey the day following or the second day after the tenth session at the radiographic institute of Dr. X.?

"Second. The alopecia and the conjunctivitis complained of, can they be considered as having been caused by a defective, unskillful or imprudent application of the X-rays, or may they be attributed to another cause?"

A few years ago a case was reported in the medical journals of Paris very similar to the one here noticed. The patient had been operated on in Dublin; the result was an obstinate burn which, after about six months showed no signs of improvement. She was sent to Paris for consultation with Apostali. The case recovered slowly and finally returned cured.

Those who use the galvanic current know that a burn from an electrode causes a most obstinate and irritable sore.

DIAGNOSIS OF CANCER OF THE STOMACH.—M. Hartmann, at a recent discussion before the Société de Chirurgie of cancer of the stomach ("Le Progrès Médical," January 12th), repeated very emphatically that the examination of the blood is of the greatest importance, because there is a marked diminution of the hemoglobine and the leucocites, and also great changes in the forms of the globules.

M. Hartmann cited two cases in support of his thesis: in the first there were signs of neoplasms, and the examination of the blood showed that they did not exist; the operation confirmed their absence. In the second case there were very distinct symptoms of ulcer of the stomach, but the examination of the blood showed that it was a case of cancer of the stomach, and this was also confirmed by the operation.

M. Routier has recently observed a patient in whom the disease of Reichman had been diagnosed in a most positive manner by very competent physicians; but under chloroform M. Routier discovered two ovarian cysts, for which he operated. This fact, he says, is another proof of how necessary it is for the surgeon to make an exhaustive examination before finally deciding upon his future treatment.

Surgical cases of this class are now occupying a wide field of discussion in Europe. Besides Hartmann, Lejars, Loison, Chaput, Routier, Lafourcade, Delorme, Schwartz, Lucas-Championnière and others have occupied the attention of the Académie de Médecine, the Académie des Sciences, the Société de Chirurgie, etc. In this connection the following is apropos:

M. Routier read to the Société de Chirurgie a report of three cases of surgery of the stomach, treated by M. Lafourcade, of Bayonne ("Gazette Hebdomadaire," January 6th). In one of the cases the pylorus was resected and the patient was cured after an anterior gastro-enterostomosis. In another a stricture of the pylorus, the anterior gastro-entero-anastomosis was performed with satisfactory results.

A most interesting discussion on the treatment of tumors or contractions, fibrous or cancerous, of the pylorus, followed the report of M. Routier.

Finally M. Lucas-Championnière presented an appendix vermiformis, which, when removed, contained two grains of lead, which was no doubt the cause of the inflammatory action requiring surgical interference.

INTESTINAL PERFORATIONS.—M. Lejars reported to the same Société de Chirurgie ("Progrès Médical," January 12th) two cases of intestinal perforation originating in typhoid fever, that were operated on by M. Leguen, one of which terminated successfully. In this case the intervention was made six hours after the perforation; M. Leguen, in order to close this perforation, was obliged to anastomose above the epiploon; except a stercoral fistula, which healed spontaneously, the case continued satisfactorily. With this case and one by M. Laison, recently presented, there have been sixteen cases of perforation of the intestines from typhoid fever treated by surgical interference successfully. M. Lejars operated on a case lately of perforation from typhoid fever with suppurative peritonitis, but the intervention was too late to save the patient. The proper time for performing is therefore of the greatest importance.

M. Rochard has operated five times for perforation resulting from typhoid fever: in some cases he says the diagnosis is very difficult, for he was very recently called to perform an operation in a case diagnosed as perforation by the chief of clinic and the intern; but the intervention found nothing; the patient, however, recovered.

M. Delorme operated recently on a patient who had all the clinical signs of intestinal perforation; the operation discovered an appendix deeply reddened, without trace of perforation.

M. Walther, also called recently to operate for perforation from typhoid fever; the general condition of the patient was extremely bad, and M. Walther declined to interfere, and the result was that the inflammatory symptoms became located in the lesser basin behind the bladder; then suddenly the collected matter opened into the bladder, leaving a fistula which healed spontaneously in fourteen days. The diagnosis of this disease, and the indications for operating, are therefore very difficult.

M. Lejars concluded that the operation should in all such cases be performed immediately, that is, as soon as the diagnosis can be fully determined.

M. Chaput read a report of a case of M. Morestin, describing a

penetrating wound of the abdomen in which many organs were injured: a spermatic vein, an epigastric vein, the artery of the appendix and the cæcum; the operation was performed four hours after the accident. The case terminated favorably.

Again M. Laison has presented to the Académie de Médecine ("Gazette Hebdomadaire," January 20th) some interesting remarks on the diagnosis and the progress of perforations of the intestines of typhoid origin.

His conclusions are that peritoneal suppuration following typhoid perforation of the small intestines is a case for surgical interference, and that it is susceptible of cure by a timely and judicious operation.

The diagnosis rests on the pain and the contraction and falling in of the walls of the abdomen, on a sudden increase of the pulse, which becomes rapid and small; a rise in the temperature, finally a very marked increase of the leucocytes in the blood, 10,000 white globules for the cubic millimetre.

This leucocytosis follows quickly after a hypoleucocytosis of 3,000 to the c. c., and indicates that peritonitis is about to be developed.

CARBUNCLES.—Creel has relied ("Jour. Amer. Med. Ass'n"), on ecthol given internally, in doses of a teaspoonful, in cases of carbuncle, flax-seed poultices applied locally, emptying of pus, scraping out of dead tissue and cleansing with peroxide of hydrogen. After this a topic application of ecthol on absorbent cotton every four to eight hours. The average duration of this treatment in his cases was ten days.

COULDN'T BELIEVE IT.—Governor W—, of Virginia, was a splendid lawyer, and could talk a jury out of their seven senses. He was especially noted for his success in criminal cases, almost always clearing his client. He was once counsel for a man accused of horse-stealing. He made a long, eloquent, and touching speech. The jury retired, but returned in a few moments, and, with tears in their eyes, proclaimed the man not guilty. An old acquaintance stepped up to the prisoner and said:

"Jim, the danger is past; and now, honor bright, didn't you steal that horse?"

"Well, Tom, I've all along thought I took that horse; but since I've heard the Governor's argument, I don't believe I did!"

EDITOR'S TABLE.

SANITARIAN, MARCH, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

A DELUGE OF DOCTORS.

The Legislature of the State of New York, from the Executive down—Senate, Assembly, committees, public-hearings audiences—all are in evidence as doctors.

At the outset of the session the Governor asserted his competency to grasp all the knowledge required of the State Board of Health as constituted twenty-one years ago, composed of three State Commissioners of Health, the Attorney-General, the State Engineer and Surveyor, the Health Officer of the Port of New York and three other persons who already are Commissioners of Health in organized boards of health in the cities. As thus constituted and selected the board has been in virtual contact with every part of the State and, by the membership of the State Engineer, in relation with the most extensive authority on the local conditions of populous places with reference to drainage, sewerage and water supplies. Besides, the legal requirements of the three Commissioners as hitherto appointed by the Governor for the term of three years, has been that they must be graduates of legally incorporated medical colleges, and of not less than seven years' practice of their profession.

Nevertheless, with remarkable comprehensive knowledge as a physician, Governor Odell, in his message at the opening of the Legislature, said, with reference to the State Board of Health: "The duties are such that one competent man, giving his time thereto, might easily perform them, provided that the supervision of tuberculosis and glanders in cattle were transferred to the Department of Agriculture, where it properly belongs, and the necessity for a large office force could be largely reduced." That the Governor knows the man competent to the exercise of all these duties must be taken for granted, for his opportunities for knowing such a man have been great.

Promptly among the first bills introduced by expert doctors in both branches of the Legislature was one abolishing the present

State Board of Health and providing for a single-headed commission. The Commissioner of Health is to be appointed by the Governor, and is to be a physician of ten years' experience in actual practice of his profession. The term of the first Commissioner is to expire on December 31, 1904, and thereafter his successor shall be appointed for a term of four years. The Governor is to appoint the Commissioner within twenty days after the act takes effect, when the terms of the present members of the State Board of Health and the Secretary of the Board shall expire. The Commissioner is to receive a salary of $3,500 and is empowered to employ such clerical assistance as may be necessary. A State Bureau of Vital Statistics is created, to be under the Commissioner's supervision. The powers and duties of the present board are to devolve upon the single-headed commission.

Just as this number is closing, February 18th, the announcement is made that "Governor Odell is now in possession of the third of his single-headed commissioner bills. It provides for the abolition of the present State Board of Health and the appointment of a Commissioner of Health, at an annual salary of $3,500, such appointment to be made by the Governor. The Commissioner must be a physician of ten years' experience."

But how very limited that experience for the functions devolved upon him! And at such a salary.

The office is second to none in importance subject to the Governor's appointment. That its importance is so insignificant, to the minds of the Governor and the Legislature, can be accounted for, however, by the limited knowledge of their "school." Of the personal dangers in dealing with contagious diseases, infected things and infected places, and the knowledge required to protect the public, they are so ignorant as to consider them of no consequence.

Apropos to the Governor's bill, but evidently without intent, another bill was introduced in the Assembly, which soon brought the members thereof into conflict with a multitude of other members of like cult, assembled for a hearing in self-defense, lest their rights be sacrificed: An amendatory bill of an existing act regulating the practice of medicine, as follows:

"Any person shall be regarded as practicing medicine within the meaning of this act who shall prescribe, direct, recommend or advise, for the use of any other person, any remedy or agent whatsoever, whether with or without the use of any medicine, drug, instrument or other appliance, for the treatment, relief or cure of any

wound, fracture or bodily injury, infirmity, physical or mental, or other defect or disease. This article shall not be construed as prohibiting the service of any person in an emergency, or the domestic administration of domestic remedies; nor shall it be construed as prohibiting any manufacturer of artificial eyes, limbs or orthopedic instruments or trusses in fitting such instruments on persons in need thereof when such artificial eyes, limbs or orthopedic instruments or trusses are prescribed by lawfully qualified physicians."

Another absurd bill that has been introduced proposes to regulate the type for the printing of books, newspapers or serial literature. None shall be published in type smaller than eight-point, of which the lower case alphabet measures less than fourteen ems. The lines of type shall be separated by at least two-point leads. . . . "The State Board of Health shall enforce the provisions of this section, and if, in its judgment, the public health will not be injured thereby, the board may adopt regulations exempting certain kind of printed matter from the provisions of this section, and may on petition, grant written permission to use a smaller or more condensed type. Any person violating the provsions of this section shall be guilty of a misdemeanor, punishable by a fine of not less than fifty nor more than one thousand dollars."

Ere many days after the bill quoted got into the newspapers it raised a storm. A public hearing was demanded and granted. Never before was committee room more speedily or so completely overwhelmed with "physicians," those of the Legislature and others. And never, during the three centuries since Gonelle, the buffoon of the Duke of Ferrara, asserted that, of all classes of men in the world, physicians were the most numerous, has the assertion been more certainly verified than it has been in the present session of the New York Legislature. The ridiculous extreme of this bill is destructive of its purpose. Its enactment would be equivalent to self-stultification of the Legislature, whose every member is a "doctor." Unfortunately for public health, the conceit is not limited to the New York Legislature. It is equally great on the other side of the Continent. The Legislature of California, as referred to a few pages below, have become Eddy Scientists, without seeming to know it. The Governor and the Legislature, at his bidding, have ventured to think bubonic plague non-existent by law, and to punish any one in the State who thinks otherwise.

The story of Gonelle is so apropos to such concepts of physicians and such conceits by the lawmakers as to justify its reproduction.

It is one of the stories of Laurentius Joubert, who, after having shown the ridiculous presumption of so many assuming to act as physicians without understanding anything about disease, and that, too, in the presence of physicians, narrates this adventure:

"It is said that the Duke of Ferrara, Alphonso d'Este, at one time proposed, in a familiar way, the question in what calling are most men engaged. One said shoemakers, another tailors, a third carpenters, mariners, pettifoggers and laborers. Gonelle, his famous buffoon, said there were more physicians than any other class of men, and made a bet with the Duke, who denied it, that he would prove it in twenty-four hours. The next morning Gonelle left his lodgings, wearing a great nightcap and a cravat tied around his chin, then a hat over all, and his mantle drawn up over his shoulders. In this attire he took a route leading to the palace of his excellency, through Angel street. The first one he met asked him what was the matter; he replied that he had a raging toothache. 'Ha! my friend,' said the other, 'I know the best recipe in the world against it,' and told it to him. Gonelle inscribed his name on his tablets, pretending that he was writing down his recipe. A step further on he found two or three together, who all asked the same question, and each one gave him a remedy. He inscribed their names as the first; and thus he pursued his course very gingerly to the end of the street, not meeting a single person who did not offer him a recipe different from the rest, each one saying that his was well established, certain and nearly infallible. He wrote down the names of all. Coming to the lower court of the palace, he found himself surrounded with gentlemen (for they all knew him), who, after having learned his affliction, compelled him to take their recipes, which each one said was the best in the world. He thanked them all and wrote down their names. When he entered into the chamber of the Duke his excellency cried out: 'Eh! what have you got, Gonelle?' He replied, very piteously and complainingly: 'Toothache, the worst that ever was.' To which his excellency replied: 'Ha! Gonelle, I know a thing which will drive off the pain at once, without touching the tooth. Mr. Antonio Bonpavola has never employed a better one. Do so and so, and immediately you will be healed.' Suddenly Gonelle threw down his headdress and his attire, crying out: 'And you also, my lord, are a physician! Look at my list and see how many others I have found, between my lodgings and your

palace. Here are nearly two hundred, and I have only passed through one street. I will engage to find ten thousand in this city, if I go everywhere. Find me as many persons in any other business."*

This story aptly illustrates the common herd of pretenders in medicine. There are but few persons who do not think they know a great deal about it, even more than physicians themselves.

"POLLUTED STREAMS SELF-PURIFICATION."

This is just now the special contention of the Chicago press, and, if he is not misrepresented, of the accomplished Health Commissioner of Chicago. The contention is in virtue of the recent decision of the United States Supreme Court in the case where the State of Missouri objected to the city of Chicago draining its sewage into the Illinois and Mississippi rivers; and is that Chicago has no right to drain into the Illinois River because of the danger to the health of the people who drink Mississippi water at St. Louis, and is based upon the negative results of "chemical examinations made at a dozen or more points in the course of the stream from Chicago southwestward at a period previous to the canal's opening, when the city's sewage was carried off by the Illinois and Michigan Canal in an almost undiluted condition, whereas now it is greatly diluted by an enormous volume of water from the lake and hurried along by a comparatively swift current. . . . "The negation of the scientists is thus disposed of, and we may reason positively that the phenomena which were observed in this investigation are of general occurrence. We must believe that what is true of the Illinois River is true of all other rivers, unless the opponents of the purification theory can bring forward their examples and demonstrations also."

The Health Commissioner, at least, is doubtless familiar with the history of the same kind of chemical evidence adduced by Dr. H. Letheby, the Medical Health Officer for the city of London thirty-five years ago, who, because he was unable to find by chemical analysis any evidence of contamination of the water of the Thames ten miles below the place where sewage had been discharged into it, declared there wasn't any. And upon this he proclaimed the fallacious dogma that "sewage, when it is mixed with twenty times its volume of running water and has flowed a distance of ten or twelve miles, is ab-

*Erreurs populaires et propos vulgaires, touchant le medicine et le regime de sante. Bordeaux, 1579.

solutely destroyed: the agents of destruction being infusional animals, aquatic plants and fish and chemical oxidation." This fallacy obtained in England until about ten years later, despite the opposition of Dr. Frankland, professor of chemistry in the Royal Institute. It was universally accepted by engineers, who continued to pollute the streams with the sanction of the health authorities, and adopted as a rule of practice in the United States. It was used in justification of the use of the polluted water of the Schuylkill by the people of Philadelphia; of the polluted Passaic by the people of Jersey City and Newark, and as a reason why the people of Albany might safely take their drinking water from the Hudson, into which the sewage of Troy, only six miles above, and other cities further up, had been poured. But it was only ten years after Letheby's alleged means of sewage disposal in running water by aquatic plants and other things, that Klebs discovered among them the bacillus of typhoid fever. It was not long thereafter that Letheby's theory was reversed.

How long the living germs of it or of other water-born disease germs may live and to what distance carried has not been determinted. No sanitarian now accepts Letheby's dogma.

We know of no example better calculated to illustrate its fallacy than the water supply of Albany, which we had occasion to refer to a month ago. The first year's experience of the sand filtration of the sewage-polluted water supply was followed by a reduction of about three-quarters of the average number of cases of typhoid fever for a series of preceding years.

There is no evidence of self-purification of polluted water by dilution. The apparent purification by dilution is chiefly effected by subsidence, by the separation of solid, suspended particles when the water comes to a rest. Moreover, in this case, organic matters held in solution are carried down with the suspended matters. And it is upon this unaided, natural process of purification that the process of thorough filtration is based, as at Hamburg. The water is brought to a rest in settling reservoirs, where sedimentation takes place, and from there the water is led to the influent chambers of the filter-beds.

For the means of purification of sewage, ere it may be safely poured into the water courses, to which it appears probable that Chicago will have to resort, reference may be made to the reports of the State Board of Health of Massachusetts. According to the report for 1899, there are at the present time seventeen cities and towns in Massachusetts in which purification of sewage is effected

by filtration through gravel or sand. Report for the year 1898 gives a description of the sewage purification works and the results of frequent analyses of sewage and effluents, which may be studied with profit by all concerned.

TYPHOID FEVER AS A PIONEER FOR SANITARY WORK.

The prevalence of typhoid in the State Prison at Sing Sing in the autumn led to the discovery of conditions two months later, which sanitary knowledge and required inspection should have prevented.

Dr. Lewis, President of the State Board of Health, found 150 cases of consumption there and between thirty and forty of typhoid. He reported the plumbing so bad as to threaten the lives of the prisoners.

There are said to have been hundreds of recent cases of consumption among the convicts, but patients are rapidly drafted to Clinton and Auburn. The doctor declares that the whole prison is inadequate to the requirements of the State and a disgrace to its name.

Dr. Lewis says that cells occupied by consumptives become contaminated with germs, and criminals subsequently placed in them virtually receive the death penalty, as they are sure to become victims of the disease.

The report also calls attention to the water supply received through the Croton Aqueduct, built fifty years ago, which extends through private property and is contaminated.

All these discoveries should have been made and corrected long before and the fatal results prevented.

Verily typhoid fever has its uses. But dependence upon it as a pioneer for sanitary work is not by any means creditable to sanitary authorities.

PUNISHMENT FOR SPITTERS.

The New York Department of Health is showing renewed activity in its crusade against spitters on cars and ferryboats and on the floors of public buildings. By direction of President Michael C. Murphy a notice in respect to spitting in public has been posted in a conspicuous place in all public conveyances and buildings as follows:

Spitting on the floor of this car (or ferryboat) is a misdemeanor; $500 fine, or imprisonment, or both, may be the punishment therefor.—Section 194 of the Sanitary Code and Section 15 of the Penal Code. By Order of the Board of Health.

Section 194 reads as follows:

Spitting on the floors of public buildings and railroad cars and of ferryboats is hereby forbidden, and officers in charge of all such buildings, cars and boats shall keep posted permanently in each public building and in each railroad car and in each ferryboat a sufficient number of notices forbidding spitting upon the floors, and janitors of buildings, conductors of cars and employés of ferryboats shall call the attention of all violators of this ordinance to such notice.

THE OLEOMARGARINE BILL.

B. I. Sturgis, in a letter to the "Times," February 20th, invites attention to the impropriety of lumbering up the national statutes by a never-ending list of bills as to the edibles of the earth, when one law would serve every purpose and work no injury to trade or manufacturing. If every merchant were prohibited from offering an article for sale not properly labeled as to what it was, and confiscation was the penalty, you would need no oleomargarine bills or pure food or beer bills. The label would serve the purpose and work no injury. This could be so arranged as not to conflict with the patent or other protected medicines. He says:

"Compel every article to bear a label, telling just what the article offered is, and if necessary its constituent parts, and then the responsibility would rest with the purchaser. This will distinguish the pure from the impure; the wheat from the chaff. With such a law in force there would be no necessity of a Raines law or a license, for every grocer would have the article, and the bar would become extinct except in the regular hotels.

"The sale of adulterated goods has been going on for ages, and there is no legislation so requisite as that to prevent the adulteration of what we eat and drink.

"Let Congress pass a law that will compel the sale of the pure article, cost what it may, and you have done the poor man an equal justice with the wealthy club man, and cut a wide swath into the portals of health and temperance for all the living."

THE UTILITARIAN ASPECT OF TAXATION.

On other pages of this issue the first of a series of articles on this subject is especially worthy of attention. R. S. Guernsey, of the New York Bar, has long been a diligent student of the subject. State paternity, municipal ownership of public utilities, franchise taxes, excise and license taxes, tax on moneyed capital, on agricultural and industrial products and on transportation companies,

land tax, on incomes, etc., etc., showing what they are and what they should be, particularly relating to New York State; Federal taxation for revenue and protection, and what it should be, etc., etc. The reading of this first article of the series would be quite likely to serve as inducement to read those which are to follow.

TO INVESTIGATE THE GRIPPE.

TREASURY DEPARTMENT, Office of the Supervising Surgeon-General, Marine Hospital Service, Washington, D. C., January 18, 1901.

To Commissioned Medical Officers and Acting Assistant Surgeons of the Marine Hospital Service, Secretaries of State and Local Boards of Health and Other Sanitarians:

It is respectfully requested that a report be sent, as soon as practicable, to the Marine Hospital Bureau as to whether influenza or grippe is prevailing in your respective localities. It is desired also to have the type of the disease, the number of cases when possible, mortality, and treatment, sanitary and medicinal, with as full statistics as possible. In addition to present conditions, a statement is also desired as to the date, even though approximate, of the appearance of grippe and the estimated number of cases to date of report.

This information is desired for publication in the Public Health Reports for the information of all.

WALTER WYMAN,
Surgeon-General, M. H. S.

AMERICAN CONGRESS OF TUBERCULOSIS.

It is announced that the second annual meeting of the American Congress of Tuberculosis will be held at the Grand Central Palace, in the city of New York, on the 15th and 16th days of May, 1901, in joint session with the Medico-Legal Society of New York; that a dinner will be given to the members and guests. It is proposed to open a museum of pathology, bacteriology and public health, with an exposition of electrical and other instruments, with the use of the power furnished at the building, which it is intended to be made most complete, educating and attractive; of all appliances used in any way in arrest or treatment of the disease. For particulars address Clark Bell, Esq., President of the Medico-Legal Society, 39 Broadway, New York.

Dr. T. D. CROTHERS, of Hartford, Conn., will deliver a course of clinical lectures "On the Neuroses and Psychoses of Spirit and Drug Diseases" at the hall of the New York School of Clinical

Medicine, 328 West Forty-second street, New York City. The first lecture will be given February 18th, at 8 P. M. The profession is cordially invited to attend.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

NEW YORK.—The Secretary's Bulletin for December, 1900, population, 7,110,000: Total deaths, 9,889; death rate, 16.5; deaths under five years, 2,310; percentage of deaths under five to total deaths, 23.3; from zymotic diseases, 1,039; zymotic deaths per 1,000 from all causes, 105; cerebro-spinal meningitis, 37; typhoid fever, 263; malarial diseases, 16; smallpox, 7; scarlet fever, 60; measles, 81; erysipelas, 21; whooping-cough, 53; croup and diphtheria, 358; diarrhœal diseases, 143; acute respiratory diseases, 1,587; consumption, 1,082; puerperal diseases, 78; diseases of the digestive system not diarrhœal, 733; diseases of the urinary system, 793; diseases of the circulatory system, 970; diseases of the nervous system, 1,113; cancer, 413; accidents and violence, 467; old age, 454; unclassified, 1,160.

City of New York, 3,444,675: Total deaths, 5,237; death rate, 18.0; deaths under five years, 1,403; from cerebro-spinal meningitis, 17; typhoid fever, 97; malarial diseases, 13; smallpox, 5; scarlet fever, 32; measles, 17; erysipelas, 11; whooping-cough, 22; croup and diphtheria, 226; diarrhœal diseases, 66; acute respiratory diseases, 1,024; consumption, 661; cancer, 182.

Borough of Manhattan, 1,851,887: Total deaths, 2,867; death rate, 18.1; deaths under five years, 770; from cerebro-spinal meningitis, 11; typhoid fever, 40; malarial diseases, 1; scarlet fever, 22; measles, 5; erysipelas, 6; whooping-cough, 10; diphtheria and croup, 98; diarrhœal diseases, 51; acute respiratory diseases, 532; consumption, 346; cancer, 93.

Borough of the Bronx, 202,092: Total deaths, 315; death rate, 18.2; deaths under five years, 85; from cerebro-spinal meningitis, 2; typhoid fever, 2; malarial diseases, 2; smallpox, 5; scarlet fever, 2; measles, 4; erysipelas, 1; whooping-cough, 3; croup and diphtheria, 17; diarrhœal diseases, 2; acute respiratory diseases, 54; consumption, 81; cancer, 10.

Borough of Brooklyn, 1,169,796: Total deaths, 1,760; death rate, 17.8; deaths under five years, 487; from cerebro-spinal meningitis, 4; typhoid fever, 41; malarial diseases, 4; scarlet fever, 8; measles, 5; erysipelas, 3; whooping-cough, 6; croup and diphtheria, 100; diarrhœal diseases, 10; acute respiratory diseases, 378; consumption, 193; cancer, 67.

Borough of Queens, 153,734: Total deaths, 203; death rate, 15.5; deaths under five years, 48; typhoid fever, 3; malarial diseases, 3; measles, 3; erysipelas, 1; whooping-cough, 3; croup and diphtheria, 7; diarrhœal diseases, 1; acute respiratory diseases, 45; consumption, 29; cancer, 6.

Borough of Richmond, 67,166: Total deaths, 92; death rate, 16.3; deaths under five years, 13; typhoid fever, 2; malarial diseases, 3; croup and diphtheria, 4; diarrhœal diseases, 2; acute respiratory diseases, 15; consumption, 12; cancer, 6.

For the year 1900 the number of deaths from all causes, reported in the Monthly Bulletin, was 128,468; this exceeds the mortality of 1899 by 6,647 and the average of the past five years by 8,000. Besides these reported deaths there were 1,600 returned too late for report, making the death rate for the year 18.5, which is the estimated average rate for past five years. The increase over last year has been in all the sanitary districts except those of the central and southern parts of the State and is largest in the maritime district, where there were 5,600 more deaths than in 1899.

The *infant mortality* was 4,000 greater than last year, the increase being general, but the percentage of deaths under five years, 30.5, is the average of past years. The mid-summer rate was low.

The *zymotic mortality* was 13.7 per cent. of the total, against an average of 14.6, grippe, not included, relatively lowering it. *Typhoid fever* was unusually prevalent in the autumn, causing 1,948 deaths, 350 above the average, of which 200 were in the maritime district. *Measles* prevailed to excess in all parts of the State, the 1,333 deaths being 300 above the average. *Scarlet fever* was less than usually prevalent. *Diphtheria,* increasing from the low prevalence of recent years, had yet a mortality 500 below the average. *Diarrhœal diseases* caused the average mortality of about 8,000 deaths, notably increasing the late summer and autumn mortality of the rural parts of the State rather than the urban, the maritime district having had fewer diarrhœal deaths than the average.

Smallpox was brought from outside to seventeen places during the first half of the year, without spread; from August to November the State was free from it; then a traveling minstrel troupe left it at three localities in the eastern part of the State, whence it spread, and at the end of the year it existed at five places and their vicinities with promise of further spread. Of 14 deaths, 4

have occurred outside New York City. In December one death from smallpox occurred in Schenectady and one in Gloversville, besides five in New York City.

The *grippe* epidemic of the year was unusually severe, lasted six months and probably added 11,500 to the mortality; it appears in the deaths from local diseases, chiefly the acute respiratory, the number of which consequently is very high, and in unclassified causes of death.

February 15th: By recent reports, *la grippe* is losing its hold. Deaths from it in the boroughs of Manhattan and Brooklyn, respectively, for the three weeks ending February 9th: Manhattan, 68, 32, 35; Brooklyn, 30, 27, 30, against 94 and 38 for the week ending January 19th. Deaths from *smallpox* for the three weeks, 9, all in the borough of Manhattan. The number of cases in the borough at the end of this period was about 75—it is spreading.

Albany, 100,000: Total deaths, 133; death rate, 15.6; deaths under five years, 18; from scarlet fever, 2; whooping-cough, 1; croup and diphtheria, 6; acute respiratory diseases, 14; consumption, 13; cancer, 11.

Syracuse, 108,374: Total deaths, 120; death rate, 13.0; deaths under five years, 21; from typhoid fever, 1; erysipelas, 1; croup and diphtheria, 4; diarrhœal diseases, 5; acute respiratory diseases, 9; consumption, 13; cancer, 11.

Rochester, 162,436: Total deaths, 172; death rate, 12.6; deaths under five years, 42; from typhoid fever, 4; scarlet fever, 1; measles, 9; erysipelas, 1; whooping-cough, 3; croup and diphtheria, 6; diarrhœal diseases, 1; acute respiratory diseases, 18; consumption, 19; cancer, 6.

Buffalo, 352,219: Total deaths, 409; death rate, 13.9; deaths under five years, 115; from cerebro-spinal meningitis, 3; typhoid fever, 14; scarlet fever, 5; erysipelas, 1; whooping-cough, 5; croup and diphtheria, 12; diarrhœal diseases, 18; acute respiratory diseases, 57; consumption, 26; cancer, 26.

CALIFORNIA.—Los Angeles, 102,479.—Report for January: Deaths, 245; under five years, 27; from specific infectious diseases, 41—diphtheria 6, typhoid fever 5; influenza, 14; phthisis, 36—"25 had lived here less than ten years." Annual death rate, 28.22.

A bill has been introduced in the Senate (Sacramento "Bee," January 31st), at the behest of the Governor, making it a felony for any one to publish the existence of bubonic plague until it has

first been officially declared by the State Board of Health:—A felony for a journalist to tell the truth without special permission from the Governor, and a misdemeanor for a State Board of Health to strangle facts and circulate that which is not!

Dr. Kinyoun is Federal quarantine officer. Under the laws of the United States, he is required to report to the Marine Hospital Service at Washington, under charge of Dr. Wyman, the facts concerning disease in that locality to which he has been delegated. It is the duty of Surgeon-General Wyman to print those reports and to circulate them throughout the United States, California included.

Under this idiotic act, Kinyoun and Wyman would be felons if they had not first obtained the august authority of the State Board of Health to tell the truth concerning the bubonic plague.

Under the laws of this State, each physician attending a patient who has died has to sign a certificate attesting the nature of the fatal disease. By this act, if a physician or a coroner should aver that a man had died from bubonic plague, he would be guilty of felony, provided he did not first obtain the sanction of the State Board of Health. In other words, this bill is an act to make perjurers out of reputable physicians under penalty of being felons if they tell the truth.

More than that: It is a gag measure in the interest of the Father of All Lies. It is an attempt on the part of one man to dictate to all others what their pens shall write and what their lips shall say. It is not only unconstitutional, it is asinine as well.

For the sake of the hitherto good name for common sense of California, the "Bee" asks the Legislature not to write itself down an ass by passing it.

Apropos to the foregoing we append a report of a dinner speech by the recently re-elected president of the San Francisco Health Department, Dr. J. M. WILLIAMSON:

"In responding for the Health Department, I can truthfully say that to me belongs the distinction of representing the most unpopular division of the city government.

"Many incidents have occurred during the incumbency of the present Board of Health which have served to place the members in a peculiar position before the public. The press has been most liberal in its denunciations, and one unacquainted with the facts might readily form the opinion that the board is either an organization instituted for the importation, propagation and distribution

of Oriental diseases, or a band of highwaymen having for an object the looting of the city treasury.

"A year ago, on an occasion similar to this, I had the privilege of speaking for the Health Department. At that time it was stated that the policy of the board would be one of adherence to duty in acordance with the letters and spirit of the charter. The work of the department has been carried out as nearly as possible along this line, with excellent results in some of the institutions under our control and with indifferent results in others.

"In the City and County Hospital the new system of purchasing supplies has so reduced the expenditures of the subsistence and drug accounts that the cost of maintenance for the past six months has been over $10,000 less than during the corresponding six months of the previous year. In the emergency hospitals the expense to the city during the same period has been lessened by $5,000. The City and County Almshouse, as usual, has kept within its appropriation.

"In the health office less money has been spent than in previous years, for the reason that the money was not on hand to spend. This I am perfectly frank to admit. We had not the funds we needed, and several important plans had to be suspended and even abandoned. During the coming year we hope to demonstrate a progressive improvement throughout the entire department.

"Now a word in regard to the attacks which have been directed at this board. Early in the present year the board found something it was not looking for. The action taken was the same as that taken two years before under circumstances which at that time warranted prompt and speedy handling of a grave situation. The consequence was a concerted assault by certain papers of this city, which assault has continued almost unremittingly ever since. It is unnecessary to discuss the subject at length. All I can say is that the Board of Health during the whole of this bitter controversy has promulgated nothing but the exact facts—facts which are incontrovertible and have been verified and reverified, and which constitute an unbroken chain of evidence, having its links forged in the laboratories of the University of California, Johns Hopkins University, the Boston Health Department, the United States Marine Hospital Service and a dozen other reputable institutions.

"The assertions which have been printed and scattered broadcast concerning the motives governing the actions of the Board of Health have been nothing less than falsehoods. The same can be

said regarding the vilification of the Federal quarantine officer, whose principal fault is that he obeys the orders of his superiors and plays no favorites.

"A lie is a lie, whether it be printed in the columns of a newspaper, whether it be uttered by the lips of medical sycophants hovering round the gubernatorial coattails, or whether it be traced by the point of an executive pen.

"The truth in the end will prevail. It may be prevented; it may be distorted; it may be showered with abuse and smothered with invective, but to the surface it will surely come and at the last will be admitted by those who now repudiate it."

CONNECTICUT.—The State Board of Health Bulletin reports for December: Total deaths, 1,129, in 168 towns having an aggregate population of 908,355. The death rate for the large towns was 15.1; for the small towns, 14.1; for the State, 14.9. Deaths under five years numbered 258. Deaths from infectious diseases numbered 111—9.8 per cent. of the total mortality. From cerebro-spinal meningitis, 9; typhoid fever, 20; malarial diseases, 5; scarlet fever, 7; measles, 3; erysipelas, 2; whooping-cough, 5; croup and diphtheria, 33; diarrhœal diseases, 19; acute respiratory diseases, 191; consumption, 112; influenza, 5.

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports for four weeks ending February 2, 1901: Total deaths, 551; death rate, 25.6; deaths under five years, 126; from typhoid fever, 6; scarlet fever, 16; croup and diphtheria, 11; diarrhœal diseases, 4; acute respiratory diseases, 119; consumption, 73; influenza, 70; cancer, 14.

Congress has taken much needed action for the promotion of the public health. The House has added $500,000 to the ordinary budget to provide a filtration system, and the Senate has added about $550,000 to extend and maintain and perfect the sewerage system.

GEORGIA.—Atlanta, January 19th: The City Board of Health reorganized yesterday. Dr. W. C. Jarnagin was re-elected president and Dr. E. H. Richardson elected secretary. An interesting feature of the meeting was that made by the remarks of Dr. B. W. Bizzell concerning the action of the Finance Committee in taking $5,000 from the appropriation to the Sanitary Department to give it to the Committee on Hospital and Charities for the management

of contagious diseases in Atlanta. Dr. Bizzell stated that the amount given the committee would be only a drop in the bucket. The amount would by no means be sufficient for the work, he said.

Dr. Bizzell moved that, pending the final action of the Council, the president, secretary and Committee on Contagious Diseases appoint a corps of inspectors and nurses to look after the patients. Dr. Benson moved as a substitute that the old corps of inspectors and nurses be continued at the hospital until definite action had been taken. The substitute was adopted.

Dr. Benson moved that the board continue its present arrangement with the county for the care of contagious diseases outside the city limits. Dr. Bizzell suggested that the entire matter be acted upon at the next meeting of the board, and his suggestion met with the approval of the board.

ILLINOIS.—Chicago, 1,698,575. Summary for the year 1900; Total deaths, 24,941; death rate, 14.68; deaths under five years, 8,283; from pneumonia, 3,389; diseases of nervous system, 2,677; consumption, 2,599; diseases of the heart, 1,893; violence, 1,577; acute intestinal diseases, 1,354; nephritis, 1,117; bronchitis, 1,105; cancer, 896; diarrhœal diseases, 864; diphtheria, 797; other zymotic diseases, 678; other tubercular diseases, 354; typhoid fever, 337; scarlet fever, 226; croup, 43. Total deaths during the month of December, 1900, 2,174; death rate, 14.68; deaths under five years, 643; from cerebro-spinal meningitis, 1; typhoid fever, 43; scarlet fever, 12; erysipelas, 6; measles, 3; whooping-cough, 33; diphtheria, 66; influenza, 24; acute respiratory diseases, 561; consumption, 211; cancer, 33.

INDIANA.—The State Board of Health, with commendable zeal, has studied sanitary conditions, and promptly combated the first appearance of infectious and contagious diseases. Many valuable suggestions are presented in their annual report. The State should sacredly guard the public health.

"Health is the soul that animates all the enjoyments of life, which fade and are tasteless, if not dead, without it." Without health a man starves at the best and greatest tables, is poor and wretched in the midst of the greatest treasures and fortunes. The pollution of our streams and lakes through the sewage of cities and towns and the waste of factories and packing establishments, seriously menaces the public health, and presents serious sanitary problems that must be met if we expect immunity from infectious and contagious diseases."—Extract from Governor's Message.

said regarding the vilification of the Federal quarantine officer, whose principal fault is that he obeys the orders of his superiors and plays no favorites.

"A lie is a lie, whether it be printed in the columns of a newspaper, whether it be uttered by the lips of medical sycophants hovering round the gubernatorial coattails, or whether it be traced by the point of an executive pen.

"The truth in the end will prevail. It may be prevented; it may be distorted; it may be showered with abuse and smothered with invective, but to the surface it will surely come and at the last will be admitted by those who now repudiate it."

CONNECTICUT.—The State Board of Health Bulletin reports for December: Total deaths, 1,129, in 168 towns having an aggregate population of 908,355. The death rate for the large towns was 15.1; for the small towns, 14.1; for the State, 14.9. Deaths under five years numbered 258. Deaths from infectious diseases numbered 111—9.8 per cent. of the total mortality. From cerebro-spinal meningitis, 9; typhoid fever, 20; malarial diseases, 5; scarlet fever, 7; measles, 3; erysipelas, 2; whooping-cough, 5; croup and diphtheria, 33; diarrhœal diseases, 19; acute respiratory diseases, 191; consumption, 112; influenza, 5.

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports for four weeks ending February 2, 1901: Total deaths, 551; death rate, 25.6; deaths under five years, 126; from typhoid fever, 6; scarlet fever, 16; croup and diphtheria, 11; diarrhœal diseases, 4; acute respiratory diseases, 119; consumption, 73; influenza, 70; cancer, 14.

Congress has taken much needed action for the promotion of the public health. The House has added $500,000 to the ordinary budget to provide a filtration system, and the Senate has added about $550,000 to extend and maintain and perfect the sewerage system.

GEORGIA.—Atlanta, January 19th: The City Board of Health reorganized yesterday. Dr. W. C. Jarnagin was re-elected president and Dr. E. H. Richardson elected secretary. An interesting feature of the meeting was that made by the remarks of Dr. B. W. Bizzell concerning the action of the Finance Committee in taking $5,000 from the appropriation to the Sanitary Department to give it to the Committee on Hospital and Charities for the management

of contagious diseases in Atlanta. Dr. Bizzell stated that the amount given the committee would be only a drop in the bucket. The amount would by no means be sufficient for the work, he said.

Dr. Bizzell moved that, pending the final action of the Council, the president, secretary and Committee on Contagious Diseases appoint a corps of inspectors and nurses to look after the patients. Dr. Benson moved as a substitute that the old corps of inspectors and nurses be continued at the hospital until definite action had been taken. The substitute was adopted.

Dr. Benson moved that the board continue its present arrangement with the county for the care of contagious diseases outside the city limits. Dr. Bizzell suggested that the entire matter be acted upon at the next meeting of the board, and his suggestion met with the approval of the board.

ILLINOIS.—Chicago, 1,698,575. Summary for the year 1900; Total deaths, 24,941; death rate, 14.68; deaths under five years, 8,283; from pneumonia, 3,389; diseases of nervous system, 2,677; consumption, 2,599; diseases of the heart, 1,893; violence, 1,577; acute intestinal diseases, 1,354; nephritis, 1,117; bronchitis, 1,105; cancer, 896; diarrhœal diseases, 864; diphtheria, 797; other zymotic diseases, 678; other tubercular diseases, 354; typhoid fever, 337; scarlet fever, 226; croup, 43. Total deaths during the month of December, 1900, 2,174; death rate, 14.68; deaths under five years, 643; from cerebro-spinal meningitis, 1; typhoid fever, 43; scarlet fever, 12; erysipelas, 6; measles, 3; whooping-cough, 33; diphtheria, 66; influenza, 24; acute respiratory diseases, 561; consumption, 211; cancer, 33.

INDIANA.—The State Board of Health, with commendable zeal, has studied sanitary conditions, and promptly combated the first appearance of infectious and contagious diseases. Many valuable suggestions are presented in their annual report. The State should sacredly guard the public health.

"Health is the soul that animates all the enjoyments of life, which fade and are tasteless, if not dead, without it." Without health a man starves at the best and greatest tables, is poor and wretched in the midst of the greatest treasures and fortunes. The pollution of our streams and lakes through the sewage of cities and towns and the waste of factories and packing establishments, seriously menaces the public health, and presents serious sanitary problems that must be met if we expect immunity from infectious and contagious diseases."—Extract from Governor's Message.

IOWA.—Outbreaks of the following infectious diseases have been reported during the month of December as having occurred: *Diphtheria*—In thirteen places. *Measles*—In What Cheer. *Scarlet Fever*—In nine places. *Smallpox*—In twenty-six places. *Typhoid Fever*—In Burlington, Des Moines, Dubuque, Ottumwa.

KANSAS.—The Secretary of the State Board of Health gives notice that during the month of January, 1901, *smallpox* was reported at forty-six places, with an aggregate of 725 cases and 4 deaths.

About one-half of these cases occurred in Crawford and Cherokee counties, and three of the four deaths reported for the month occurred in these counties. Of late the health authorities there have gotten the smallpox situation in much better shape, and during the present month we look for a large decrease in the number of cases. In other parts of the State the epidemic is being controlled as well as could be expected. Our health authorities have great difficulty in controlling the spread of this disease on account of the lack of stringent health laws.

LOUISIANA.—New Orleans, 300,000—90,000 colored. Report for December: Total deaths, 602—233 colored; death rates, white, 21.0; colored, 31.0; total, 24.0; deaths under five years, 132—51 colored; from cerebro-spinal meningitis, 3; typhoid fever, 10; malarial fevers, 11; scarlet fever, 4; diphtheria, 3; diarrhœal diseases, 30; acute respiratory diseases, 58; consumption, 71; tuberculosis, 18; cancer, 20.

"The public markets of New Orleans are the filthiest things in the city. They ought to be torn down and the slabs taken up and the slime and dirt and filth and cesspools cleared away, and then everything that is perishable ought to be consumed in flames."—A. K. Miller, a private citizen.

"Why, these public markets are just as nice and neat and clean and sweet-smelling as they can be. I like to walk through them; and I believe this ordinance is going to be the grandest thing in the history of New Orleans."—Charles Dickson, Councilman from the First Ward.—"Times-Democrat," January 25th, which proceeds to report "the street and sidewalks near the market are lined with dirt and covered with refuse of every description. In the gutters that surround the market stagnant water, two or three inches deep. The mud was deep and soft with slime, the water in the gutters black, vile and malodorous and both literally strewn with vegetable

litter and decaying fruit scraps, etc. This is a comparatively modern market. The facilities are provided and ordinances prescribe for maintaining a state of decent cleanliness on and about the premises. Any claim or mention of sanitation in connection with this market would, of course, be strictly in the line of a practical joke."

But it should be borne in mind that, as between the two, the mud of the concentrated market is less dangerous to health than the street and store dust to which the marketing of all sorts is subject in the kind of markets for which there has been much contention, as opposed to the city ordinance abolishing such markets. The dust which is blown and swirled through streets, or raised by broom and feather brush, in the store and market stands throughout the city is, to say the least, of an equally bad kind of mud, but dry and respirable—poisons the eyes, throat and lungs of the people, as well as the food exposed to it. It is of the same substance as the mud, which is wet dust, and not liable to be breathed.

MARYLAND.—Baltimore, 541,000—78,000 colored. Report for December: Total deaths, 787; death rate, 17.45; deaths under five years, 217; from typhoid fever, 19; scarlet fever, 3; whooping-cough, 2; diphtheria and croup, 20; influenza, 1; acute respiratory diseases, 136; consumption, 97; cancer, 18.

The annual report of the board shows that the number of cases of infectious diseases reported was: Smallpox, 17; diphtheria, 1,800; croup, 50; scarlet fever, 402; *typhoid,* 871; measles, 2,770; mumps, 160; whooping-cough, 239; chicken-pox, 192.

No wonder, with such a showing of typhoid fever, Health Commissioner Bosly urges a general sewerage system for the city. Referring to previous reports and efforts for a sewerage system, he calls attention to the facility with which the surface water is disposed of. Baltimore, being built on rolling land, storm and other water runs off much more easily than would be the case in Chicago, New Orleans or other flat cities.

If the surface water were only rain, the objection, beyond the inconvenience to pedestrians in encountering flowing water in the streets, would not be serious. But, as conditions are here, not only storm water, but that from kitchens, bathrooms, hydrants and in some cases from closets, flows over the alleys and streets, percolates through the soil and spreads disease germs. In the last few years practically all the new houses have been furnished with interior flush closets, which empty into wells in the yards. There

are over 90,000 earth closets in the city. The enormous quantity of polluted matter flowing every day into these wells has resulted in saturating the soil with dangerous organic matter. When the wells become filled their contents flow into alleys and streets. That this is one of the most frequent nuisances that the Health Department has to contend with is shown by the large number of complaints that are received from all sections of the city, and by the number of notices—amounting in the past year to 33,428—to abate such nuisances that have been sent out by this department.

MASSACHUSETTS.—Thirty-first annual report of the State Board of Health, for the year ending September 30, 1899, and of the special work relating to food and drug inspection during the same period, also of that which relates to water supply and sewerage for the calendar year 1899.

It might go without saying that the special subjects treated of in this volume of eight hundred and sixty-eight pages are of interest to all sanitarians and to State organizations for the protection and promotion of the public health. Moreover, that the work of the board has been prosecuted by accomplished officers and skilled employés.

The year 1899, as shown by the mortality returns, was, like its predecessors, a year of more than average healthfulness. The death rate of the State was slightly less than that of the previous year, allowing for an average growth of population, such as had prevailed between the two census enumerations of 1890 and 1895. The death rate from the principal infectious diseases was slightly, but not very much, greater than that of 1898.

It appears that there was an increase in the mortality from smallpox, diphtheria, scarlet fever, measles, whooping-cough and pneumonia, amounting to 1,396 deaths, and decrease of 587 deaths in the mortality from typhoid fever, cholera infantum, consumption, dysentery, cancer and cerebro-spinal meningitis. Smallpox was more prevalent than in any year since 1894. But the number of places in which outbreaks occurred was small, and all in the eastern portion of the State. No case was reported from any town in which rags were used for the manufacture of paper. It is worthy of note that the circumstances in some cases revealed a gross violation of certain specific laws relating to vaccination: Eleven cases occurred among unvaccinated mill operatives at Fall River, while there were also four cases among unvaccinated scholars in the public schools.

The death rate from typhoid fever is properly taken as an index of the sanitary condition of any community for a series of years, special reference being had to the purity of the public water supply as a matter of the highest importance. One of the most notable points in the sanitary history of the State is the almost uniform decline in the mortality from this diseases, in proportion as measures have been taken to introduce better water supplies and to improve those which already exist.

Food and Drugs.

The details of the food and drug inspection by the board form a special report.

Cheese appears to have less adulteration in Massachusetts than any other of the principal articles of food. Of thirty-four examples examined, no evidence of adulteration was found; but the real reason for this is the lack of a legal standard of quality. Several samples of skimmed milk cheese were found. Massachusetts has no law fixing the standard of fat in cheese, and in the absence of such a law skimmed milk cheese can be sold with impunity. Five of the Western States have laws fixing the standard of fat from 20 to 35 per cent. Tabulated statistics show that the laws of 1883 to prevent adulteration have brought about a marked improvement. This is especially true of butter, condensed milk, condiments, coffee, molasses, maple syrups and maple sugar, honey, confectionery and canned goods. The percentage of adulteration in these articles is much lower than a few years ago; but in wheat flour, spirits, wine, beer and cider, drugs, jellies and jams a good deal of adulteration exists.

While adulterated coffee is one of the most common forms of falsification found in the markets, adulterated tea is comparatively rare. At the beginning of operations under the food acts in 1883 the markets were still flooded with the cheap imitations of coffee which became so common soon after the civil war. They were mostly put up in packages containing one pound in each package, the mixture containing variable percentages of chicory, roasted peas, beans, wheat, rye and other cereals. They were usually sold at a much lower price than pure coffee. There is now a considerable demand for coffee substitutes, and many brands of roasted cereals find a ready sale and are mostly labelled honestly. At the present time the adulterations of coffee are chiefly those which consist of a mixture, the chief ingredients of which are usually

pure coffee in the proportion of sixty to eighty per cent., the remainder consisting either of chicory or cereals or both, the whole being sold either in bulk or in packages of two to five pounds or more. These are usually labelled as blended or mixed coffee, or often as pure coffee, but quite as often they bear a misleading label, which, after considerable study, appears to indicate a mixture.

The general result of analyses of coffee shows a reduction from 33 per cent. to 18.7 per cent. of foreign substance. Several years ago an artificial coffee berry was invented, having a very close resemblance to the genuine roasted berry. It was undoubtedly believed by the manufacturers that this imitation could be used successfully by mixing it with roasted, unground coffee berries in certain proportions. The false berries, however, being made of roasted starch or of similar material, lacked the most important characteristic of genuine coffee, the taste or flavor. Hence as an adulteration they proved a failure, especially in States where food inspection is practised.

The examination of teas shows a remarkable freedom from adulteration, the whole number of samples collected being 976, with only thirty-one adulterated samples. The ratio of adulteration in the later period was greater than that of the first, but this fact has little significance, since the absolute numbers in each case were quite small.

Within the past few years adulteration has found in jellies and jams a fruitful field of operation. Not many years ago the principal constituents of such articles were chiefly fruit, sugar and water, but the tendency to cheapen the product has led to the introduction of glucose instead of cane sugar, of cheaper instead of the more expensive fruits, and of aniline dyes to imitate the color of genuine fruits. This industry has largely increased within a few years.

There are also special reports on laboratory work, water supply and sewerage, with advice to cities and towns; examination of water supplies, summary of water supply statistics, purification of sewage and water at the Lawrence experiment station, statistical summaries, etc., of universal importance.

Boston, 560,892. Report for November, 1900: Total deaths, 839; under five years, 252; death rate, 17.95; deaths from typhoid fever, 16; scarlet fever, 13; diphtheria and croup, 62; pneumonia, 66; tuberculosis of the lungs 85, meninges 10, peritoneum, 1; cancer, 43.

January 18th ("Advertiser"): As a result of the grip and pneu-

monia, which have been so epidemic, the Boston hospitals are crowded to their fullest capacity. In many of the wards every bed is taken and extra cots which have been brought in take up every available inch of room. In some cases mattresses are being thrown upon the floor so that no sufferer may be refused admission.

February 10th: There were fourteen deaths in Boston during the past week on account of grip. Of these, thirteen were complicated with other diseases.

MICHIGAN.—The Secretary of the State Board reports for January, 1901, compared with the preceding month, influenza, pneumonia, inflammation of kidney and smallpox were more prevalent; and typhoid fever, diarrhœa and remittent fever were less prevalent. Compared with the average in the ten years, 1891-1900, typhoid fever and smallpox were more prevalent; and diarrhœa, intermittent fever, erysipelas, remittent fever, measles, cerebro-spinal meningitis and whooping-cough less than usually prevalent.

Reports from all sources show *cerebro-spinal meningitis* reported at 2 places more; *whooping-cough* at the same number of places; *measles* at 2 places more; *smallpox* at 4 places more; *diphtheria* at 6 places more; *typhoid fever* at 46 places less; *consumption* at 6 places more, and *scarlet fever* at 39 places more, in the month of January, 1901, when compared with the preceding month.

The number of deaths reported to the Secretary of State for the month of January was 3,173, corresponding to a death rate of 15.7.

There were 544 deaths of infants under one year of age, and of 192 aged one to four, 972 deaths of persons aged 65 years and over. Important causes of death were as follows: Pulmonary tuberculosis, 235; other forms of tuberculosis, 30; typhoid fever, 76; diphtheria and croup, 69; scarlet fever, 30; measles, 3; whooping-cough, 13; pneumonia, 402; influenza, 206; cancer, 108; accidents and violence, 143. There was also one death from smallpox returned from the township of Michigamme, county of Marquette. As compared with the preceding month, there was an increase of 498 deaths, chiefly due to pneumonia and influenza. Typhoid fever showed a marked decrease.

MINNESOTA.—Minneapolis, 240,000. Report for December: Total deaths, 181; death rate, 8.57; deaths under five years, 40; from cerebro-spinal meningitis, 3; typhoid fever, 7; scarlet

fever, 2; diphtheria, 13; acute respiratory diseases, 34; consumption, 22; cancer, 6.

St. Paul, 165,000. Report for December: Total deaths, 138; death rate, 10.03; deaths under five years, 43; from typhoid fever, 4; scarlet fever, 1; diphtheria, 6; acute respiratory diseases, 21; consumption, 13; cancer, 7.

MISSOURI.—St. Louis, 575,200—37,000 colored. Report for December: Total deaths, 853; death rate, 17.76; deaths under five years, 188; from cerebro-spinal meningitis, 2; smallpox, 1; typhoid fever, 19; scarlet fever, 8; malarial fevers, 7; diphtheria and croup, 51; diarrhœal diseases, 14; acute respiratory diseases, 124; consumption, 87; cancer, 33.

St. Louis, January 25, 1901: The report of Consulting Engineer Hiram Phillips, presented to Dr. C. L. McElwee, president of the State Board of Health, in St. Louis, to-day, will recommend asking the State Legislature for such legislation and appropriations as may be required to enable the board to cause the correction of nuisances and abuses in existing sewer systems, and to vest the board with power to approve or disapprove proposed sewer systems and sewage disposal plants.

Mr. Phillips exhibits a certain preference for the "septic tank system," which is used in Berlin, London and other European cities, but in comparatively few cities in this country. Independence, Mo., a city of 6,974 inhabitants, has a plant of this kind that cost $27,507.54. Mr. Phillips praises the city liberally for its enterprise in adopting what appears to him to be the most modern and sanitary system for the disposal of sewage.

This system disposes of sewage by chemical decomposition by means of septic tanks and filter beds. While the system is employed in several European cities, many American sewer experts have not yet thoroughly approved of it as suitable for large cities, as it is considered too expensive.

MONTANA.—Many of the influential papers of the State are now advocating the creation of a State Board of Health. Among others is the Billings "Gazette," which well says that "properly organized and composed of good, reputable members such a body can do much good to conserve the general health of the State, if its authority is not too much curtailed." It is in the curtailing of necessary authority that most State Boards of Health have been partial or entire failures.

NEW JERSEY.—Hudson County, 386,048. Report for December: Total deaths, 530; death rate, 16.5; deaths under five years, 158; from typhoid fever, 6; malarial fevers, 4; scarlet fever, 4; diphtheria and croup, 29; diarrhœal diseases, 2; all zymotic diseases, 50; acute respiratory diseases, 111; consumption, 58.

Newark, 250,000. Report for four weeks ending January 26: Total deaths, 398; death rate, 20.9; deaths under five years, 114; from cerebro-spinal meningitis, 3; typhoid fever, 2; scarlet fever, 1; diphtheria and croup, 19; influenza, 15; acute respiratory diseases, 87; consumption, 45.

Paterson, 105,174. Report for December: Total deaths, 141; death rate, 15.7; deaths under five years, 45; from smallpox, 1; typhoid fever, 1; croup and diphtheria, 3; diarrhœal diseases, 4; acute respiratory diseases, 23; consumption, 21; cancer, 4.

NORTH CAROLINA.—The State Board of Health Bulletin reports for December from 22 towns having an aggregate population of 150,450—61,124 colored: Total deaths, 173—95 colored; death rates, white, 10.5; colored, 18.6; total, 13.8; deaths under five years, 54—33 colored; from typhoid fever, 4; malarial fevers, 10; diphtheria, 1; whooping-cough, 2; pneumonia, 24; consumption, 18; brain diseases, 12; heart diseases, 7; neurotic diseases, 13; diarrhœal diseases, 11; violence, 6; all other causes, 65.

OHIO.—Cleveland, 395,000. Report for December: Total deaths, 555; death rate, 16.8; deaths under five years, 179; from typhoid fever, 14; influenza, 4; scarlet fever, 3; diphtheria and croup, 21; smallpox, 2; erysipelas, 1; diarrhœal diseases, 9; acute respiratory diseases, 86; consumption, 41; cancer, 15.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for four weeks ending February 2: Total deaths, 2,044; under five years, 421; from typhoid fever, 44; scarlet fever, 18; croup and diphtheria, 82; acute respiratory diseases, 364; consumption, 220; cancer, 64.

Pittsburgh, 321,616. Report for four weeks ending January 26: Total deaths, 531; death rate, 21.3; deaths under five years, 185; from cerebro-spinal meningitis, 3; typhoid fever, 38; scarlet fever, 5; diphtheria and croup, 16; influenza, 38; acute respiratory diseases, 136; consumption, 23; cancer, 10.

SOUTH CAROLINA.—The letter (Charleston "Courier," February 5th) of Dr. James Evans, sanitary and executive officer of the State Board of Health, with regard to the smallpox situation in the State, shows very plainly the necessity for some decided action on the part of the Legislature with regard to the disease.

Dr. Evans says: "It is manifest that unless some prompt and decided action is taken in placing the management of the epidemic under the control of a central authority, under the Governor's supervision, it will be impossible to prevent its widespread extension over the State," and he remarks finally, that the vaccination bill now before the House, while rendering the act of 1898 more effective, does not give the State board authority to enter any incorporate towns to enforce it, when the local boards are indifferent about its enforcement or refuse to act. The only remedy is to make them subordinate to the State Board of Health.

TENNESSEE.—"The American" (Nashville), January 28th, questions the utility of the State Board of Health under present auspices. And, as it does not secure statistics from the health officers of the various counties, suggests that it would be well to have a law on the subject ordering this done. There is no record kept at the capitol of the births and deaths or of the progress of any disease in the State. It is not known whether Tennessee is a healthful State or an unhealthful State; whether West Tennessee is more healthful than Middle Tennessee or Middle Tennessee than East Tennessee; whether consumption is on the decrease or increase in Tennessee.

The State Board of Health cost $20,000 the past two years—$12,000 in 1899 and $8,000 in 1900. If this is not sufficient to enable it to gather information and issue an annual report, a sufficient sum for the purpose will no doubt be appropriated by the General Assembly.

TEXAS.—The State Health Officer's report ("Texas News," December 21, 1900) is almost wholly devoted to smallpox, yellow fever, plague and quarantine. Consumption is considered in a paragraph of fifteen lines, in which he suggests that "steps (quarantine?) will eventually have to be taken to prevent its spread." Scarlatina, which was exceedingly prevalent during the year, is disposed of in ten lines—suggestive of nothing but quarantine. On practical sanitary work for the prevention of disease there is 'hing. There not having been hitherto any record of vital sta-

tistics, he recommends a law requiring all physicians in the State to report to their respective county health officers all births and deaths, and requiring county clerks to report marriages, the county health officers in turn transmitting them to his office. This, he says, would answer the purpose, and the "medical practice law," disinfection of railway cars—with reference to consumption—are each disposed of in a short paragraph.

Dr. C. H. Wilkinson, City Health Physician of Galveston, is strongly (Dallas "News") in favor of the creation of a State Board of Health. He says:

"If ever a necessity existed for a State Board of Health it exists in Texas to-day. It is a well-known fact that two years ago an effort was made by the city of Galveston and other communities to secure a State board, but without success. The present methods were cited as all that were necessary to protect the people of Texas in the matter of health, and the advocates of a State board were defeated. But conditions as well as public opinion have materially changed during the past two years. To-day Texas is practically overrun by a disease which promises, if uninterrupted, to invade every precinct in the State. Smallpox is everywhere. It seems to have gotten beyond the control of the State health authorities and threatens to involve some of our counties in a heavy and useless expense before it leaves us.

"I sincerely trust that our Senators and Representatives at Austin may urge the importance of a State Board of Health. In the meantime I would urge every man, woman and child in Galveston to get vaccinated at once, unless immuned, for no one knows now when he is going to come in contact with walking cases of smallpox."

UTAH.—There is an unseemly conflict (Salt Lake "Herald," January 16th) between the State health authorities and the school authorities. The State Board of Health, the highest health authority in the State, has insisted on vaccination and at sundry times when the epidemic seemed to be growing dangerously widespread, upon the exclusion of the unvaccinated from the schools. In this position the board has the support of the best medical authority in the State, and the highest State tribunal, the Supreme Court of Utah, has decided that the board was acting properly and within the limits of the law. On the other hand, a very large proportion of the people have resisted the regulations prescribed in re-

gard to vaccination, some of them denying its efficacy and insisting that it is a relic of barbarism and only being urged in the interest of physicians and druggists, and have openly and persistently fought the closing of the public schools to unvaccinated children as a highhanded and unwarranted interference with the personal liberty of the individual. Meanwhile *smallpox* prevails and is likely to continue until steps are taken for effectual vaccination.

WASHINGTON.—Seattle, 90,000. Report for December: Total deaths, 62; death rate, 8.26; deaths under five years, 10; from typhoid fever, 4; scarlet fever, 2; acute lung diseases, 5; consumption, 8.

WISCONSIN.—Milwaukee, 290,000. Report for December: Total deaths, 303; death rate, 12.3; deaths under five years, 114; from typhoid fever, 3; measles, 8; scarlet fever, 3; croup and diphtheria, 12; acute respiratory diseases, 47; consumption, 32; cancer, 18.

THE HEALTH OF THE ARMY.

Report of the Surgeon-General of the Army for the fiscal year ending June 30, 1900. A volume of four hundred pages, comprehending in detail an account of the appliances, supplies, hospitals, hospital corps, hospital ships, army nurse corps, camps, departments, divisions, diseases, conditions and health.

Referring to his report for the calendar year 1898, the Surgeon-General states that it was not practicable then to present the statistics of the Volunteer Army for the same period. He therefore submits in this report the delayed statistics of the volunteer force for 1898, together with those of the Regular and Volunteer armies for the calendar year 1899.

During the year 1898, 217,072 cases of disease and injury were reported by our medical officers serving with volunteer troops. This is equivalent to 2,145.83 admissions to sick report during the year for every thousand men present in the command, or a little over two entries on sick report per man. Of this admission rate 2,037.20 were caused by disease and only 108.63 by injuries. Malarial fevers and diarrheal diseases constituted a little over one-half of the admissions, the rate for the former having been 573.56 and for the latter 453.10. The entries for typhoid fever numbered 16,796, equivalent to an admission rate of 166.03 per thousand men during the year. The rate for yellow

fever was 5.58 per thousand; for measles, 61.46, and for small-pox a total of 73 cases gave a rate of only 0.72 per thousand men.

Of the 10,989 injuries reported, one-tenth were considered due to exhaustion from exposure and fatigue. It is an interesting fact that more men were ruptured than injured by gunshot. The former numbered 795, the latter 600, giving rates, respectively, of 7.86 and 5.93 per thousand of strength.

In the Regular Army in 1898 the admission rate, 2,146.94 per thousand of strength, was the same as in the Volunteer Army, but the ratios of the causes of admission were not identical. Disease caused a rate of 1,937.71, and injury 209.23. On account of the service of so large a proportion of the regular troops in Cuba, malarial infection was the cause of nearly one-third of the whole number taken on the sick reports, the admission rate for these diseases having been 694.64 cases for every thousand men of the strength. Diarrheal diseases constituted one-seventh of the cases admitted. The entries for typhoid fever numbered 4,130, equal to 88.56 per thousand men. The rate for yellow fever was 12.95, for measles 25.09, and for small-pox 0.40.

Of 9,758 injuries, only 308 were reported due to exhaustion from exposure and fatigue; 1.457 were gunshot wounds, giving a rate of 31.24 per thousand men, and 255 were cases of hernia, equaling a rate of 5.47.

The total number of deaths among volunteers admitted to sick report in 1898 was 2,851, equal to an annual rate of 28.18 per thousand men. Of these deaths 2,664, or 26.33 per thousand men, were due to disease, and 187, or 1.85 per thousand men, to injuries. Typhoid fever caused the largest number of deaths, 1,738, equivalent to 17.18 deaths per thousand men. Gunshot wounds occasioned 1.17, malarial fevers 1.96, diarrheal diseases 1.29, yellow fever 0.73, and injuries other than gunshot 0.68, leaving 5.17 for distribution among all other causes of fatality to make up the total death rate of 28.18 per thousand men during the year.

With the statements made in the last paragraph the following concerning the regular troops in 1898 may be compared:

The total number of deaths was 1,285, equal to a rate of 27.55 per thousand men. The death rate from disease was 22; from injury, 5.55. The largest individual item in the death rate was 9.74 deaths from typhoid fever in every thousand men. Gunshot wounds occasioned a death rate of 3.94; malarial fevers, 3.24;

diarrheal diseases, 2.14; yellow fever, 1.50, and injuries other than gunshot, 1.61; leaving 5.38 for distribution among all other causes of fatality to make up the total death rate of 27.55 per thousand of men for the year.

In the year 1897, a year of peace, the death rate from all causes was 5.11, and the average annual rate for the previous decade was 6.99. The contrast here requires no comment.

In 1898 the volunteer troops serving in the Philippine Islands had the lowest admission rate, 1,832.10 per thousand of strength; those serving in Cuba the highest, 4,070.34, while the rate in Porto Rico, 2.175.92, did not differ much from that of the troops in the United States, 2.071.65. The high rate in Cuba was due to the excessive prevalence of malarial fevers, the rate for which alone amounted to 2,555.02, and yellow fever added 121.72 to the rate; but the admission rates for most other diseases were either not in excess or were actually lower than those of the Volunteer Army as a whole.

Among the regular troops in Cuba in 1898 the death rate was exceedingly high, 98.16 per thousand men, as compared with their admission rate of 2,631.76. This means that during their service on this island slight cases were infrequent, or, which is more likely, were not taken upon sick report. The death rate from disease was 61.15; from injuries, 37.01, gunshot wounds having contributed 33.33 of the latter rate. The fatal diseases were typhoid fever, which caused a death rate of 14.17; yellow fever, which occasioned a rate of 17.57; malarial infections 13.12, and diarrheal diseases 9.97.

The volunteers in Porto Rico in 1898 had a death rate of 52.09, of which 49.43 was caused by disease. Typhoid fever was the deadly factor, it being held responsible for 40.66 deaths per thousand of strength. But for this epidemic of typhoid fever among these troops their medical record would have been comparatively good.

The regular troops also suffered from this epidemic, their total death rate having been 41.45 and their rate from disease 39.38, of which 22.80 was caused by typhoid fever and 5.70 by malarial diseases.

The volunteer troops serving in the Philippines in 1898 had an admission rate of 1,832.10 per thousand men, 1,719.73 from disease, and 112.36 from injury; 422.47 from malarial diseases, and 398.63 from diarrheal diseases. The death rate, 24.70 per

thousand men, was constituted by 21.27 occasioned by disease and 3.43 by injury, 2.86 of the latter being the results of gunshot injuries. Typhoid fever caused deaths equivalent to 9.28 per thousand for the year; diarrheal diseases, 2.86; small-pox, 2.14, and malarial fevers, 1.43.

Among the regular troops the death rate in the Philippines was 22.74, 18.60 from disease and 4.13 from injury, 3.10 of the latter from gunshot. Typhoid fever caused a death rate of 7.58; small-pox, 2.07, and malarial fevers and diarrheal diseases 1.72 each.

Among volunteers serving in the United States in 1898 the death rate amounted to 24.41 per thousand of mean strength for the year, of which 23.29 was due to disease and 1.11 to injury. Typhoid fever was the prominent cause of death, 16.59 of the total rate having been reported as due to it. The rate caused by malarial fevers was 1.26, by pneumonia 1, and by diarrheal diseases 0.60.

The death rate of the regulars in the United States in 1898 was 20.14, 17.45 from disease and 2.69 from injuries, of which 1.21 were from gunshot. Typhoid fever caused a rate of 8.79; malarial fevers, 2.24, and diarrheal diseases, 1.39. A large proportion of the cases which gave the high death rate from disease were imported by the regular troops from Cuba.

During the calendar year 1899 there were 229,885 admissions to sick report recorded in a mean strength of 105,456 regulars and volunteers. This is equivalent to a rate of 2,178.06 per thousand of strength, as compared with 2,146.18 per thousand during the year 1898 and with 1,236.66, the mean annual rate of the decade 1888-1897. Of the admission rate for the year, 714.99 was constituted by malarial diseases, 380.69 by diarrheal diseases, and 192.48 by injury, of which 21.56 admissions per thousand men resulted from gunshot. Typhoid fever contributed only 20.69 cases per thousand of strength. Of the admission rate for 1898, malarial fevers constituted 611.78, diarrheal diseases 388.62, injuries 140.38, of which only 13.92 resulted from gunshot. Typhoid fever contributed 141.59 cases per thousand of strength.

The deaths in 1899 amounted to 1,945, equal to a rate of 18.43 per thousand, as contrasted with 27.99 during the year 1898 and with 6.69, the mean of the preceding decade. The principal causes of death and the rates per thousand men contributed by them were: Gunshot wounds 5.10, other injuries 1.57, typhoid fever 2.44, diarrheal diseases 2.14, malarial diseases 0.99, pneumonia 0.94, and variola 0.80. The prominent causes of death and

the rates contributed by them in 1898 were: Typhoid fever 14.83, gunshot wounds 2.04, other injuries 0.98, diarrheal diseases 1.45, malarial infections 0.97, and pneumonia 0.92.

Troops serving in Cuba had the highest rate of admission, 2,749.74 per thousand, as against 3,413.54 per thousand in 1898, the result of exposures during the active service of the Santiago campaign. The lowest admission rate during the past year, 1,677.51, was given by troops serving in the United States, but this, which must be regarded as a high rate when contrasted with the rates of the preceding years of peace, together with the still higher rate, 2,062.82, given by troops in the United States in 1898, was due to sickness brought home from service in the islands.

During the year 1899, 78,936 cases of disease and injury were reported as having occurred in the Volunteer Army, the mean strength of which was 41,100. This is equivalent to an admission rate of 1,920.49 per thousand men, or rather less than 2 entries per man during the year.

The number of deaths from all causes among the troops of the Regular Army amounted to 1,202, equivalent to 18.65 per thousand of strength; 380 of the deaths, constituting 5.90 of the total death rate, were due to injury and 248, or 3.85 per thousand, to gunshot wounds.

The number of deaths reported from the Volunteer Army was 743, of which 324 were due to injuries and 419 to disease. The death rate from all causes was 18.08; from disease, 10.20; from injuries, 7.88. The principal causes of this mortality were diarrheal diseases, which contributed 1.95 to the rate; typhoid fever, 1.90; small-pox, 1.44; pneumonia, 1.22; malarial fevers, 1.05, and gunshot injuries, 7.06.

The regular troops in Cuba in 1899 had a mean strength of 11,969 officers and men, from which 35,401 cases were admitted to sick report, the equivalent of 2,957.73 per thousand of strength. Of this rate, 2.690.77 was due to disease and 266.94 to injuries, only 3.09 being caused by gunshot. The death rate from all causes was 19.55, of which 17.29 was caused by disease and 2.26 by injury. Typhoid fever occasioned 63 deaths, equivalent to a rate of 5.26 per thousand men; yellow fever, 50 deaths, equivalent to 4.17 per thousand, and malarial infections, 20 deaths, equivalent to a rate of 1.67.

The volunteers in Cuba during this year, with a mean strength of 8,082, had an admission rate of 2,441.72 per thousand, of which

1,047.64 was occasionel by malarial fevers and 372.93 by diarrheal diseases.

The mean strength of the regulars in Porto Rico in 1899 was 3,347. In this command the admission rate for disease was 2,352.85, for injury 275.48; total, 2,628.33. The death rate was only 11.35 per thousand, of which 2.19 was due to injury and only 9.26 to disease. Diarrheal diseases and typhoid fever were the prominent causes, the former having contributed 2.99 and the latter 2.69 to the rate of mortality.

The regulars in the Pacific islands, with a mean strength of 22,922 in 1899, had an admission rate of 2,630.92—2,454.10 from disease and 176.82 from injury, of which 39.05 per thousand of strength was the result of gunshot. Diarrheal diseases and malarial infections constituted more than half of the cases, the former having a rate of 728.17 and the latter 705.49, a very considerable increase on the rates of 1898, respectively 431.97 and 429.56. The death rate also was higher, 31.10 per thousand of strength, of which 17.80 was due to disease and 13.30 to injury, 9.60 of the 13.30 being the result of gunshot.

The regulars at the home posts had a mean strength of 26,208 in 1899. The admission rate for this command was 1,772.17 per thousand of strength—1,551.47 for disease and 220.70 for injury; 363.37 of the rate was due to malarial infections, mostly the result of foreign service. The death rate was light, only 6.72 from disease and 1.56 from injury; a total of 8.28 per thousand of strength for the year.

The volunteers at the home posts, with a mean strength of 15,984, had an excellent record, which compares favorably with that of the Regular Army in times of peace. The death rate from all causes was only 7.26 per thousand men, 0.94 due to injury and 6.32 to disease.

Review of report on Prevalence of Special Diseases and other Special Subjects deferred till next number.

QUARANTINE AND PUBLIC HEALTH.

Report of F. Montizambert, M. D., F. R. C. S., D. C. L., Director-General of Public Health of Canada, for the year ending October 31, 1900.—A concise review of the prevalence of the Bubonic Plague abroad, and of its threatening attitude to this country and to Canada; the use of Haffkine's Fluid for its prevention, and the precautionary measures at the Canadian seaports against the in-

troduction of plague. Of paramount importance in the latter respect, however, he urges the need of practical knowledge by quarantine officers, and the desirability of requiring them to go through a qualifying course of bacteriology. Excepting small-pox, the Dominion appears to have been remarkably free from infectious diseases during the year, and this had been very generally promptly dealt with and arrested at the places of its occurrence.

VITAL STATISTICS OF HAVANA.

Report of W. C. Gorgas, Major and Surgeon, U. S. A., Chief Sanitary Officer for the year 1900. Yellow fever stands eighth in the records of deaths for the year. Tuberculosis with 851 deaths, diarrhœa and enteritis with 506 deaths, organic diseases of the heart with 443 deaths, meningitis with 395 deaths, diseases of the arteries with 357 deaths, malaria with 344 deaths and pneumonia with 319 deaths, each have caused a greater mortality than yellow fever. Typhoid fever, diphtheria, small-pox and other epidemic diseases have caused a comparatively small mortality. Tetanus played a considerable part in the mortality of Havana.

In the list of deaths the large proportion of deaths among the white males is accounted for by the fact that a good proportion of the population of Havana is composed of foreigners, and these foreigners are almost entirely males, which causes the male population of Havana to be greatly in excess of the female. Under the heading of Deaths by Districts, the western district has 2,425 deaths, which is much larger than the other districts. This is due to the fact that most of the large hospitals are located in this district.

Of the 1,244 cases of yellow fever, 920 were Spaniards, with a death rate slightly above the average death rate for the city, which was 24.90 per cent., while among the Americans there were 235 cases, with a death rate of a little over 14 per cent., very much below this average. Of the cases occurring, about two-thirds had been in Cuba less than one year, the large majority of these being recently arrived Spanish immigrants. The immigration has been very large, the last four months of the year giving a little more than 11,000. Of the 857 occupied blocks making up this city, 452 have had one or more cases of yellow fever in them. In these blocks there are 26,701 houses, of these 885 have shown evidence of infection by having had one or more cases. Of the 885 infected houses, 694 were successfully disinfected by one disinfection, as

shown by the fact that they had only one case, and 130 required two disinfections; that is, of the 885 infected houses, all but 61 were freed from yellow fever after the second disinfection. This is evidence of the success of careful isolation and prompt disinfection.

Mortality statistics are given for the last preceding ten years. The average number of deaths for the ten years was 10,243. We had last year 4,000 less than this average. This average, of course, was greatly increased by including the three years of reconcentration. When we compare death rates, like favorable conditions will be seen. The death rate for 1900 was only 24.40, while the lowest of the preceding ten years, 1893, was 30.66, and for the first year of our occupation, 1899, it was 33.67.

Deaths, by months and years, from yellow fever for the past eleven years show that there were only three years that had fewer deaths from yellow fever than 1900, and that the total of the two years of American occupation, 1899 and 1900, was considerably less than the total of any two preceding years.

Dr. Gorgas thinks it is not too much, from these figures, to state that the measures, sanitary and otherwise, taken by the American authorities with a view of improving the health of the city, have been most eminently successful; that this work has reduced the death rate of 1898, the last year of Spanish rule, from 91.03, which represents 21,252 deaths, to 24.40, representing 6,102 deaths; that the methods being pursued have caused a steady improvement in the sanitary conditions of Havana; that during the last year we have decreased the death rate from 33.67, representing 8,153 deaths, to 24.40, representing 6,102 deaths. Taking the average number of deaths per year for the ten years, 10,243, which would be for the two years 20,486, as representing what the deaths would have been if we had not interfered, and deducting from this the actual number of deaths, 14,255, which has occurred in the two years of our occupation, it leaves 6,231, which represents the number of lives saved in the City of Havana by our efforts.

BUENOS AYRES, 817,799. Report for November: Total deaths, 1,624; deaths under five years, 867; from measles, 32; diphtheria and croup, 34; scarlet fever, 55; typhoid fever, 11; whooping-cough, 7; smallpox, 14; acute respiratory diseases, 273; consumption, 132; other tubercular diseases, 54; cancer, 63.

BOOK REVIEWS.

SAUNDERS' AMERICAN YEAR-BOOK. THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY FOR 1901. A Yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery, drawn from journals, monographs, and text-books, of the leading American and foreign authors and investigators. Arranged with critical editorial comments, by eminent American specialists. In two volumes—Volume I, including *General Medicine,* Octavo, 681 pages, illustrated; Volume II, *General Surgery,* Octavo, 610 pages, illustrated. Philadelphia and London: W. B. SAUNDERS & Co. 1901. Per volume: Cloth, $3.00 net; half Morocco, $3,75 net.

The issue of the Year-Book for 1900 in two volumes, the publishers state, met with such general approval from the profession that the house decided to follow the same plan with the Year-Book for 1901. This arrangement has a two-fold advantage. To the physician who uses the entire book, it offers an increased amount of matter in the most convenient form for easy consultation, and without any increase in price; while specialists and others who want either the medical or the surgical section alone, secure the complete consideration of their branch at a nominal sum, without the necessity of purchasing considerable material for which they have no special use.

The sub-title of this volume is MEDICINE. The eminent American specialists whose names are given on the title-page are significant of the excellence of the work. They are: Drs. Samuel W. Abbott, Archibald Church, Louis A. Duhring, D. L. Edsall, Alfred Hand, r., Milton B. Hartzell, Reid Hunt, Wyatt ohnson, Walter Jones, A. O. J. Kelly, David Riesman, Louis Starr, Alfred Stengel, A. A. Stevens, G. N. Stewart, Reynold W. Wilcox. Under the general editorial charge of George M. Gould, M. D.

Their subjects are: General medicine, pediatrics, pathology and bacteriology, nervous and mental diseases, diseases of the skin and syphilis, materia medica and therapeutics, physiology, legal medicine, public hygiene and preventive medicine, physiological chemistry.

That the field is thoroughly covered might go without saying. For it would be difficult to select a more masterful apposition of writers, respectively, and the subjects treated of. Altogether, a work of singular excellence and of great practical utility to every physician.

PHYSICAL DIAGNOSIS IN OBSTETRICS. A guide in antepartum, partum, and postpartum examinations for the use of physicians and undergraduates. By EDWARD A. AYERS, M.D., Professor of Obstetrics in the New York Polyclinic; Attending Physician to the Mothers' and Babies' Hospital. 8vo., pp. 183, illustrated. Price, $2.00. New York: E. B. TREAT & Co., 241-243 West 23d Street.

An important and singularly well adapted book for medical students. With such knowledge as here taught and demonstrated with life-like illustrations, students will no longer be graduated without practical knowledge of pregnancy and confinement. The author has been engaged in teaching clinical obstetrics to both physicians and students for many years. He has turned his knowledge to admirable account in this elucidation of the most essential knowledge to successful practice of obstetrics.

A TEXT BOOK ON PRACTICAL OBSTETRICS. By EGBERT H. GRANDIN, M.D., Gynecologist to the Columbus Hospital; Consulting Gynecologist to the French Hospital; Late Consulting Obstetric and Obstetric Surgeon of the New York Maternity Hospital; Late Obstetrician of the New York Infant Asylum; Fellow of the American Gynecological Society, of the New York Academy of Medicine, of the New York Obstetrical Society, etc., etc., etc., with the collaboration of GEORGE W. JARMAN, M.D., Gynecologist to the Cancer Hospital; Instructor in Gynecology in the Medical Department of the Columbia University; Late Obstetric Surgeon of the New York Maternity Hospital; Fellow of the American Gynecological Society, of the New York Academy of Medicine, of the New York Obstetrical Society, etc. Third Edition, Revised and Enlarged. Illustrated with Fifty-two Full Page Photographic Plates and One Hundred and Five Illustrations in the Text. 6½ x 9½ inches. Pages xiv-511. Extra Cloth, $4.00, net; Sheep, $4.75, net. F. A. DAVIS COMPANY, Publishers, 1914-1916 Cherry Street, Philadelphia.

Every physician who would keep abreast with this rapidly advancing branch of his profession needs this book. It is equally thorough in its detail of all that is essential in practice and the elimination of useless redundancy.

The last decade has been characterized by both substantial progress in the practice of obstetrics and in methods of instruction. The work before us is based upon clinical knowledge. It is direct

in its statements of facts and learned in its teaching: alike useful to the practitioner, and to the student as a text book.

The illustrations are particularly excellent and elaborate. Indeed, the work in every detail is commendable to both practitioner and student.

THE FRIGATE CONSTITUTION. THE CENTRAL FIGURE OF THE NAVY UNDER SAIL. By IRA N. HOLLIS. 12mo., pp. 263, illustrated. Boston and New York: HOUGHTON, MIFFLIN & Co.

"Old Ironsides" brings into view the history of the American Navy. She is here pictured in full sail at the outset of her career and in her several triumphant contests over the hitherto-regarded invincibles of her day and generation.

In his preface Mr. Hollis states that while in no sense a history of the navy, yet his book brings together a reasonably connected narrative of naval events, and particularly of all such as had any close connection with the history of this old frigate. His information has been drawn from the American State papers, the Constitution's logbooks, and the reports of commanding officers, as well as from naval biographies and histories. Mr. Hollis has prepared his book with the idea of first making clear the relation of the sailor to the country, and then to stimulate an interest in the rebuilding of the old ship. Should he succeed as well as did Oliver Wendell Holmes, he would be greatly to be envied. Holmes, then a student in the Dane Law School and just passed his majority, having seen in a newspaper one morning that the Constitution was to be destroyed by order of the Navy Department, dashed off his poem "Old Ironsides," which at once made him famous. The public sentiment aroused by it was irresistible; the Navy Department's order was revoked. Congress at once appropriated sufficient money to rebuild the old ship without alteration of her original model, the Constitution being placed in the new dry dock in the Boston Navy Yard in June, 1833.

Again, by an act of Congress, approved February 14, 1900, the Secretary of the Navy is authorized to restore the Constitution, as regards hull and rigging, to her original condition while in active service, provided a sum of money estimated at $400,000 can be raised through the agency of the Massachusetts State Society of the United States Daughters of 1812. Large as is this sum, the patriotic women having it in charge hope to see the old ship completely restored within a few years, and if Mr. Hollis, while giving us a most readable and interesting sketch of our early navy and of

its remarkable triumphs over seemingly insurmountable obstacles, can also further this end, he will have accomplished most successfully a double purpose.

Mr. Hollis describes the formation of the navy at the time when the Constitution was built, three classes of ships usually forming the bulk of all navies—sloops, frigates, and line-of-battle ships, and their armaments.

He gives most interesting sketches of the early commanders, the war with Tripoli, and Edward Preble's exploits; the outbreak of the war of 1812, the marvelous escape of the Constitution from a British squadron, partly through superior sailing ability, and partly through the clever use of a kedge anchor; the destruction of the frigate Guerrièrre; the action between the Constitution and the Java, which lasted about two hours and a half, every stick of timber on the latter, except part of the main-mast, being shot away in less than an hour; her cruise under Stewart and the capture of the Cyane and Levant.

Mr. Hollis reminds us that while our success in the war of 1812 can hardly be credited to a single frigate, yet the Constitution did by far the greatest amount of damage of any one vessel, while the guns captured by her amounted to more than half the whole number taken from British armed ships upon the sea.

An inspiring book, which should and doubtless will be read by all of the younger navy who would know the links and maintain the integrity of the chain to which we are chiefly indebted for the establishment and maintenance of our national independence.

STRINGTOWN ON THE PIKE. A Tale of Northernmost Kentucky. By JOHN URI LLOYD, author of "Etidorhpa." With illustrations. Price, $1.50. New York: DODD, MEAD & Co., 1900.

Of this book the St. Paul "Dispatch" says: "America has seldom produced so vigorous a book, so virile in its writing, so vital in its story." THE SANITARIAN, measuring its practical knowledge of American novels by actual experience, agrees with the "Dispatch." For "To a high-strung man," as saith the colonel, "the smallah the reflection the greatah the insult. Only persons of the highah order can comprehend this fact." It is a book of much wit and attractive wisdom—wisdom to break in for a time on too close attention to business and acquire invigoration for the work in hand. Besides you gain knowledge of people worth knowing—the Stringtown people and their peculiarities.

CONTEMPORARY LITERATURE.

PERSONAL CHARACTER IN THE ARMY.

At this time, when we are entering upon a period of permanent enlargement of the army of the United States, it becomes especially important that everything possible should be done, not only to train young officers in the modern art of war and in military and general engineering, but also to develop in them the highest standards of personal honor and character. It is now recorded that in the crucial test to which recent events in China subjected officers of all nations, our own showed higher standards of conduct than any others except the Japanese. The misconduct of the Chinese Boxers toward foreigners seems like mild sentimentalism as compared with the hideous murder, rapine, theft and nameless outrages against women and children perpetrated (according to various reports) by the soldiery sent to rescue foreigners and to restore order in the name of Christian civilization. There is reason to believe that General Chaffee has sent to Washington reports of these things that could not well be published, on account of their revelation of the conduct of the troops of certain other nations. Not only in China, but to a far greater extent in the Philippines, it is necessary that our officers should be men of sterling honor and of serious views and high purpose. Otherwise, the natives will have false impressions of the kindly intentions of the American Government and people, and will prolong resistance, to the increase of their own misery and to our detriment. In the work that modern armies have to do—and particularly in the work that is committed to our army—the allowances formerly made for lapses in the private character and conduct of officers are no longer permissible. No man is fit to command American soldiers who drinks intemperately, who lacks self-control and is brutish and tyrannical in his disposition, who is notoriously profane and vulgar in his habits of speech, or who fails to appreciate his responsibilities as a lifelong servant of the Government and people of the United States. Our officers are poorly paid, and they have not much to look forward to in the way of affluence or ease. Their honor and the esteem of the country are their best possessions; and West Point cannot be too assiduous in making this plain to every cadet. When the incidental customs of student life, such as hazing, take on a character that endangers somewhat the best

standards of honor and character, it is time to stop such practices. And it is very gratifying that the West Point cadets have themselves, in deference to public opinion, resolved to give up hazing. —From "The Progress of the World," in the "American Monthly Review of Reviews" for February.

CAPTAIN WILLIAM CROZIER, of the United States Army, who was Chief Ordnance Officer on the staff of General Chaffee during the expedition to Pekin, employed to good advantage the opportunity which his presence on that expedition afforded him, of comparing American troops with the troops of Japan and Europe, and he gives the results of his observations in a very interesting article in the February number of the "North American Review." The American contingent contrasted favorably with the others in its food supply, in the means of transportation at its command, and in its arms and equipment generally. But in regard to military organization, it was distinctly inferior, and in the general appearance of the men there was much to be desired. Captain Crozier says:

"Another respect in which the United States force does not well bear comparison with the others is that of the smartness and soldierly conduct of the troops. Both in China and on the way there, at Nagasaki, the men in going about were utterly careless as to their dress and bearing. The Japanese and Sikhs, at the rendezvous, in the camps and at Pekin, whenever seen in public, wore their uniforms complete and properly put on, carried themselves with military bearing, and were careful in saluting officers; and the heavy and somewhat awkward Russians, while not presenting so trim an appearance, were particular in these respects. American soldiers off duty walked around or rode in rickshaws without blouses, belts or leggings; with shirts open at the throat and breast, the sleeves unbuttoned and rolled up to different heights, or perhaps one flapping, and with the military-looking campaign hat worn in every shape and at every angle. Such sights were common. The American soldiers were the slouchiest of all, except the French."

THE HELPING HAND IN LONDON.

The final instalment of Sir Walter Besant's East London papers appears in the February "Century."

Let me repeat, he writes, that East London does not consist of slums. It is, above all, a city of quiet industry. There is no

more industrious city in the world, for it contains ten square miles entirely occupied by an orderly population. There are long miles —hundreds of miles—of streets where the houses are clean and the lives are clean.

Here and there, dotted about where circumstances and conditions have caused their growth, are found the slums. They used to be plague-spots, and in a sense they are so still; but of late years they are much improved. To find the real old slum, the foul, indescribable pigstye, one must not look for it in East London. It lingers, here and there, on the south of the Thames. Any of the medical students of Guy's Hospital, who have to attend the sick in the courts of Southwark, will lead you readily to such a slum; but in East London itself I should find it difficult to take you to places such as I remember, twenty years ago, to have looked into, shuddering. Therefore, if you read novels of the day describing things brutal and horrible beyond endurance, you should regard these descriptions with suspicion. If they are true, they belong to the past, and exist no longer save in rare and very exceptional cases, and then against the voice of public opinion in their quarter. There is enough misery and drunkenness still left among us to need no exaggeration, and one could fill these pages with truly lamentable histories. The tenements where the "casuals" herd together are full of woe; the people are everywhere suffering from the sins of their fathers, from the first even to the fourth generation. If that were all, there would be hope. Alas! they are also busy in manufacturing material for more retribution for the generations yet to follow. Terrible has been their own inheritance; terrible will be the inheritance of their children. But among these people are now working without rest, without haste, whole companies, whole armies, organized to snatch, if they can, some of the children out of the dreadful slough. They rescue many, but more are born; we keep the ranks of victims from being too crowded, but new recruits pour in every day. And so, I believe, it always must be. The poor are always with us.

A REMARKABLE AMERICAN.

The late Dr. WILLIAM PEPPER of Philadelphia is the subject of a biographical sketch contributed to the February "Century" by Francis Newton Thorpe, which reveals a character and career too little known throughout America.

In Philadelphia a bronze statue was unveiled, December 20, 1899, to the memory of William Pepper. It stands amid the

creations of his genius, and marks the culmination of his life-work. Thirty years ago the site was a ploughed field, part of the Blockley farm; to-day it overlooks the buildings, some twenty-five in number, of the University of Pennsylvania, the academic home of about three thousand students annually. Adjoining is the University Hospital, the Free Museum of Science and Art, and the permanent buildings of the Philadelphia Commercial Museums.

Dr. Pepper was the son of a physician, the celebrated "Elder Pepper," as he is called, to distinguish father and son. The father pursued advanced medical studies together with Oliver Wendell Holmes in Paris, when American students rarely went abroad. On his return to Philadelphia, he became professor of the theory and practice of medicine in the University, acquired an extensive practice, and died in 1864, at the early age of fifty-six. A few months before the father's death, the son was graduated in medicine at the University of Pennsylvania.

Great physicians are rare, and rarer is the man who also is at the same time equally great as man of affairs, as educator, and as public benefactor. Such a man the son became. In 1870, at the age of twenty-seven, he projected the University Hospital, and boldly set out to raise an endowment fund of seven hundred and fifty thousand dollars. In less than four years he secured more than half a million, including two appropriations of one hundred thousand dollars each from the Legislature. The hospital was formally opened in 1874. Its creation was necessitated by the removal of the University from its old site, where the Post-office now stands. No such task had before been done by a citizen of Philadelphia, and its performance gave Dr. Pepper rank among the first men of the city. After some thirty years of action his public account stood something like this:

Institutions founded: the University Hospital, the Commercial Museums, and the Philadelphia Free Library. Institutions reorganized and recreated: the University of Pennsylvania. Public reforms: the improvement of the city's water supply, and an entire change in the attitude of the public mind toward education and the ideals of life. To carry out these plans, Dr. Pepper raised above ten million dollars and secured about a hundred acres of land from the municipality, lying near the heart of Philadelphia. To the execution of this task he gave the service of one of the most acute and at the same time most practical minds ever vouchsafed to man. To this service of his genius he added the personal

gift of nearly half a million dollars, which he earned in the practice of an exacting profession. It may be doubted whether any other American has run a like career.

His sudden death, of angina pectoris, at Pleasanton, California, August 26, 1898, occurred just as he had completed the first week of his fifty-sixth year. He had sought rest and health too late. His physicians said of him that at death he had the heart of a man of eighty. He had literally worked himself out. A brave man, endowed with genius, a unique man, delicately aggressive, incapable of wronging his fellows, inspired with lofty ideals for the health, welfare and happiness of his fellow-men, and treating little minds as loving parents treat mischievous children—this man had gone, and left behind him, as Disraeli said of the Great Duke, "the contemplation of his character."

THE FAMOUS ASPHALT LAKE.

Asphalt is being dug out of the famous tar lake of Trinidad—the most notable existing source of the material in the world—at the rate of eighty thousand tons per annum. There are still four and a half million tons in sight, but at this rate the supply could not last long, were it not that the lake of bitumen referred to is receiving a constant accretion from the bowels of the earth. This accretion is reckoned as amounting to about twenty thousand tons yearly, and would suffice to restore the lake to its original condition if it were allowed to remain undisturbed for a few years.

This wonderful lake of pitch has an area of one hundred and fourteen acres, and recent soundings made in the middle of it have shown its depth to be one hundred and thirty-five feet in that part. Near the centre it is semi-liquid and bubbling, but elsewhere it has so hard a surface that a man on horseback can ride over it without danger of breaking through the crust. Scattered over its surface are a number of small islands which have no proper roots in the earth, so to speak, but are composed merely of accumulations of soil, though trees of considerable size grow on some of them. These islands are not stationary, but are carried slowly from place to place by the movements of the lake. Now and then one of them is entirely engulfed.—"The Saturday Evening Post."

THE SANITARIAN.

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NUMBER 377.

HOUSEHOLD AIDS TO LONGEVITY.

BY F. L. OSWALD, M.D.; Author of "Physical Education," "The Temperance Trilemma," etc.

Happiness, according to the author of "Letters from High Latitudes," is a household product, and investigators into the secrets of longevity incline to a similar conclusion. From a sanitary point of view the wandering Hebrew is an exceptional phenomenon, for in nine out of ten cases the chances of survival depend upon home-life arrangements.

Dio Lewis, the American apostle of the Fresh Air Cure for lung diseases, used to bundle up his boarders at 9 A. M., and start them out on a six mile march, in defiance of wind and weather, but always took the precaution to send a monitor along.

"Most of them would turn back at the first mile post, if they had their own way," he chuckled; "their faith in natural hygiene rises and sinks with the temperature."

To that large class of opportunists a bedroom window with rain shutters would be worth a carload of drug remedies. It would admit fresh air without its inconvenient admixtures; its broad, overlapping bars would make it possible to enjoy the benefits of direct ventilation in all but the stormiest weather; with or without moonlight promenades, each night could then be made to counteract the sanitary mischief of each day.

Another domestic arrangement, that would often turn the scales in favor of health and survival, is a home gymnasium. The disorders of the human organism could frequently be cured by mechanical, rather than chemical, prescriptions—"chopping down a bitterwood tree, instead of swallowing a decoction of its nauseous leaves," as Dr. Boerhave expressed it.

They have "ladies' axes" in some of our metropolitan hardware stores, and a Gladstonian woodshed is a good beginning, but there

ought to be supplements in the form of dumbbells, weight-pulleys and grapple-swings. The "dangling cure"—not the Texas remedy for mistakes in live-stock transactions—will often nip asthma fits in the bud, and relieve digestive troubles that would defy the specifics of the drug store. Its efficiency can be tested, without the assistance of a professional instructor, by any health seeker able to climb a chair, grasp a pair of dangling rings, and kick the chair out of the way.

The feeling of suspense, always trying to beginners, will gradually come to be associated with the idea of dietetic hygiene, and incidentally strengthens the muscles of the chest in a way that reacts on the functions of the respiratory organs.

"What shall I take?" is a question which, by and by, will be answered with the prescription of special health-exercises, though, at present, it generally refers to a choice of pills.

About a year ago a committee of New England philanthropists undertook an inquiry into the causes of the rural exodus that constantly multiplies the number of half deserted villages and crowds the large cities with juvenile employment seekers. On the question of their home grievances these refugees were mostly non-committal, or limited their explanation to a vague plea of hard times, though it was known that farm-hands just then could earn from four to six dollars a week, while many applicants for less than half that amount in city wages had to go begging, in a sad, literal sense of the word.

At last the committee caught a child of nature, who repaid the offer of a good home with the promise to tell the whole truth, and redeemed his word by a confession to the effect that there had been no circus or traveling menagerie anywhere near West Stonington for six years, and that the youngsters, including the candid deponent, were unable to stand it any longer.

The proposed remedy of competitive gymnastics, with prize offers for every county, village and township, may require years of preparatory reform campaigns; but the menagerie part of the problem admits of prompter solution. The aids to home-life, and incidentally to happiness and health, ought to include a domestic zoo. A collection of inexpensive household pets would redeem youngsters unapproachable to the influence of prize chromos and moral motto candies. A pair of nest-building pet squirrels teach the attractiveness of home life by an object lesson not easy to forget. Add a boxful of speckled gophers and gadding begins to

lose its charm. A pet monkey would eclipse the witchery of the very circus, though its performances might defeat their purpose by attracting its tree-climbing admirers in numbers making their rendezvous untenable to its proprietors, and a suburban family of my acquaintance managed to keep their truant at home by buying him a dozen pet pigeons, a few carpenter tools and a lot of loose boards for the construction of a dovecote. They made no comments. There was no need of lectures on the evils of idleness and vagrancy. The besetting foibles of their little nomad had been cured.

Thousands of incipient topers could be redeemed on the same plan—thus verifying Harriet Martineau's prediction that the drink problem would yet be solved by making health more attractive than vice, and, as it were, beating the tempter at his own game.

And the cogency of the greater happiness argument is enhanced by the circumstance that it is apt to be recognized by those most in need of its logic. At an expense not exceeding $20 per summer month, Professor H. Holdt, of Cincinnati, O., turned a large vacant hilltop building into a vacation home, where his five boys could romp around with a bevy of rabbits, woodchucks, squirrels, puppies and pet crows, and enlarge their collection by daily excursions into the neighboring woods.

"Say, Tom, can't you coax those Holdt boys along?" a neighbor overheard a young loafer say, on his way to the free lunch counter of a new saloon.

"No; I wish they would take us along," sighed Tom; "they won't drink, they've got better fun at home."

Prof. H. had a smaller zoo in his winter quarters; and the same practical philosopher availed himself of the circumstance that "home made honey is sweetest," and set his youngsters to fill the cupboards with hazle nuts, walnuts, and all sorts of dried wood-berries.

No other lunches between meals were allowed, though the family table was set only twice a day.

The three-meal custom is a fearful tax on our vital resources; half the functional energies of the organism are engrossed by problems of digestion, and the philosopher De Quincey goes so far as to doubt if the old Romans could have found time to conquer the world if they had begun their day's work with repletion.

Two meals a day would abundantly suffice for the alimentary needs of the system. No other reform would do so much to make life worth living to millions of drudging housekeepers, to whom

festivals at present bring only added burdens of toil; and a good many of their oppressors might be converted by the argument which a facetious physician suggested to the friend of an otherwise incorrigible gourmand: "Tell him that he could eat more meals on earth if he would not eat them so often."

THE INFLUENCE OF MARRIAGE ON LONGEVITY.

The fallacious deductions that have been made from statistics of married, as compared with single, life have been time and again pointed out by actuaries. Mr. Charlton Lewis refers to them in his recent lecture on life insurance fallacies. For this reason we have been particularly struck with the results of a recent investigation of the experience of the German life companies with the Roman Catholic and evangelical clergy, by Dr. Prinzing, a prominent German physician, writing in the "Allgemeines Statisches Archiv." The percentage of expected to actual deaths among the former was 112 per cent., and among the latter only 85 per cent. The most important feature of this comparison is the intelligent, and, it would seem, reasonably successful effort to eliminate the elements which usually render such comparisons fallacious. Neither can claim greater natural vigor, and, of the two, the Catholic clergyman is freer from worldly care. His higher mortality is due chiefly to diseases of the circulatory and cerebral system, chargeable to celibacy. If the explanation is correct, we, for once, have an effect fairly traced to its cause, with disturbing factors eliminated.

It is interesting in this connection to quote from a translation in the "Literary Digest," the following comments in the "Boeren Zeitung," on Dr. Prinzing's conclusions:

The most important reason for the claim that marital life in itself diminishes mortality is the fact, in accordance with Prinzing's exposition, that there is greater mortality among the husbands and wives who have lost their consorts than among those who are still married, and that women who are single do not die off much more quickly than married women. The greater mortality among widows is probably traceable to the deprivation of the care to which they have been accustomed. With certain causes of death, the beneficial influence of family life can be proved with statistical completeness; for instance, in cases of suicide, disastrous accident, and death in consequence of mental disease.

It has been ascertained that suicide is more frequent among the unmarried than among the married. Durkheim's book on suicide states that among men suicide is most frequent among the unmarried, less so among widowers, and very much less so among the married; that among women suicide most seldom occurs among those who are married, and more frequently among widows of almost all ages than among the unmarried; that misfortune is much more prevalent among the unmarried and those bereft of husbands and wives, and that mental disease appears much oftener in the unmarried, though it must be admitted that very many of the mentally ill are already debarred from marriage by the symptoms that herald their disease.

The opinion is expressed that the smaller mortality among the married may not be explained chiefly by reasons of health. Such is the opinion, for instance, of the diplomat and savant, Georg von Mayr, who claims that the considerable difference between the average length of life of unmarried and that of married men is influenced also by the circumstance that the group of the married represents, in regard to health, a company much superior to that represented by the group of the unmarried, in which physical and mental cripples of all kinds remain in proportionately greater number. Kollman also, in an excellent statistical review of the question, attaches less importance to the regularity of the daily life of the married than to the fact that the more vigorous natures are the ones who marry, and that the weaker remain single more frequently. This view, however, is met by Prinzing, who is a physician himself, with the observation that the higher mortality among those bereft of husbands and wives cannot be explained in this way. It is his opinion that family life must be credited with a much greater influence on health than it is commonly supposed to exercise, and that the power of marriage to prolong life is unequivocal. . . .

Statistical results thus seem to prove that the greater mortality of the unmarried is caused not only by the infrequency with which weaker natures marry, but, in a great measure, by certain dangers and circumstances of life to which the unmarried are more exposed. For the married person life has a much greater value; the supporter of a family cannot be replaced at death, and therefore, does not approach danger so impulsively. The unmarried, moreover, are restricted to hotel life, and are thus tempted to addict themselves to the abuse of alcohol, which not only undermines their health but provokes spiritual injury of woeful extent.

It will be noted how, in this whole line of argument, the extraneous causes which may serve to explain the higher mortality of the celibate have been recognized and eliminated. This is the only legitimate statistical method of dealing with such questions. That married life is, itself, more favorable to longevity, and that of two risks whose medical selection is in all other respects equal, the celibate is the inferior life, we make no question. But it is the method of reaching this conclusion that we regard as the most valuable feature of the discussion, and one that we would specially commend to medical men who attempt to deal with statistics.—"Insurance Monitor."

RURAL WATER SUPPLIES.

By Harvey B. Bashore, M.D.

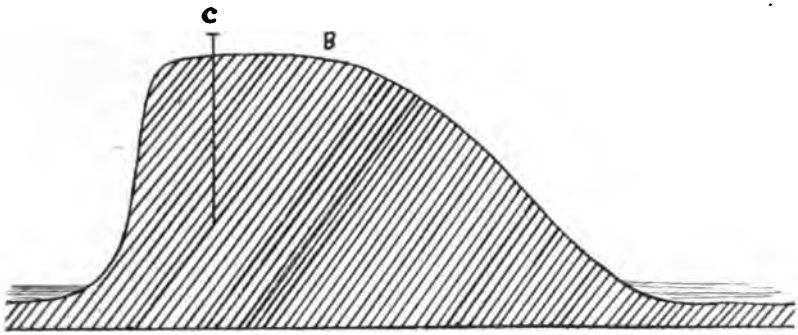
For several years I have been giving attention to the quality of the various waters used in a rural locality in central Pennsylvania. My results furnish the "same old story": Excessive pollution in many places, and not even 25 per cent. of the wells and springs yielding anything like a pure water.

Indeed, it is really worse than this, for I have not yet found a single well yielding absolutely pure water; even the best, a tube-well, gave a showing of 0.35 parts of chlorine per 100,000, and while this does not represent a very impure water, it still means a certain degree of animal contamination. It may be objected that too much weight is laid on chlorine. However, in this locality the writer is acquainted with the geological formations, and chlorine above the normal means that, without question, animal waste, at one time or another, had access to the water supply. It is interesting to note that a dug-well, which is not far from the tube-well, yields just about ten times as much chlorine, which very likely comes from a nearby privy.

The average country well in this locality yields from 1.5 to 17.0 parts of chlorine per 100,000; the last being the largest amount found. This, by the way, was the well reported by the writer in the Sanitarian some time ago, which furnished water for a family, of whom four were in bed at one time with typhoid fever; no comment is necessary.

A deep tube-well situated in a small town yielded a very bad water because it pierced a stratum of up-turned slate, the fissures

of which furnished excellent drains from numerous privies. The people who made this well thought that, of course, the deeper the well, the better the water; but on account of the geological character of the district, the fact was, the deeper the well, the greater the pollution. This is made plain by the following sketch, which represents the identical locality. C is the well, and B the situation of numerous privies and filthy back yards.



It so happens, on account of the depth of the well and the inclination of the stratum, that B is within the area of slate, the cleavage lines of which lead straight to the well, and of course act like so many water-bearing tubes. A shallow well in this place would not be pierced by so many fissures, would not drain so large an area and would likely yield a safer water. So much for the well.

If one expects anything like pure water from a well he must make a careful study of the locality, the nature and dip of the strata, the location and source of pollution, and even then it is hard to get it pure from wells of any kind except artesian.

Now for the wayside spring which figures so much in poetry. Here long ago the wild beasts came and slaked their thirst; then the Indian made trails leading to it, and here the dusky lover met his future squaw, when courting was less restricted than now. At present "Wandering Willie" stops to drink, to cook his hard-begged meal, make his tomatoe-can coffee and perhaps wash his shirt. Then comes the man with the test-tube and chemicals to tell you that the spring is polluted. Will you believe him? The scientist generally tells a truthful story, and the man with the test-tube has probably done humanity more permanent and lasting good than the "man behind the gun," but the "man behind the gun" generally gets more enduring glory.

It is only when a spring is far away from human dwellings that the water approaches purity. Several such springs I know, back in the mountains, surrounded by dog-wood, spice-wood, ancient oaks and great moss-covered rocks; they yield a water which, for drinking purposes, may be considered absolutely pure, but such a spring is the exception around here, at least.

Another spring—known since Indian times as the "Big Spring"—is worth consideration; its water bubbles up looking so pure and sparkling that you could scarcely believe the water to be polluted, yet such is the fact, for it is in the midst of a limestone region, and the surrounding habitations contaminate the water. Indeed, in a limestone region, on account of the numerous caverns and water-bearing crevices, springs are very frequently polluted.

I know another of these springs—"boiling springs"—situated in the same region, which was once suggested as a water supply for a large city; yet this spring is grossly polluted, both by surface and underground drainage, for it is right at the edge of a town. The people living here drink this water and imagine it is the best in the country.

Some time since a man dwelling about two blocks from this spring attempted to dig a well in his cellar—a queer place for a well. He soon came upon a "pretty big stream of water," he said, and wanting to see where it ended, he emptied a sack of sawdust into it; the sawdust very promptly appeared in our "boiling spring." Is it any wonder that it shows pollution?

The usual spring of the summer picnic park is a thing to be avoided. There is one in this district which is famous for its clear, fresh water; but within 50 feet is the public privy, to which people of all sorts and conditions go from all over the country, during the picnic season.

Some ice ponds which furnish "pure, country ice," I have examined and found about as filthy as can be; so beware of "country ice." Get ice from filtered or distilled water. Artificial ice is really better than any Nature ever makes about our big cities. This does not mean that art supercedes Nature, but only that art attempts to do what Nature would do under favorable conditions.

It is too bad to break up the cherished beliefs of the past, but what the world wants is truth; and the truth about country wells is that the babbling brook and the bubbling spring are suspicious sources of water supply and often very dangerous to those who slake their thirst at them.

West Bashore, Pa., February 17, 1901.

THE DEMONSTRATION OF NITROUS ACID IN WATER BY MEANS OF ERDMANN'S AMIDONAPHTHOL-K-ACID METHOD.*

By Dr. H. Mennicke.

The number of reagents for the detection of the extremely important nitrous acid or nitrites in drinking water is not small; but they almost all have the disadvantage of keeping badly and depending upon a readily misunderstood color reaction. As the result of my experiences and researches I believe that the Amidonaphthol-K-acid recommended by Erdmann is the very best of them all, and enables us to decide upon the chemical and bacteriological properties of a water. Comparative experiments with this and zinc iodid and iodid of potash-starch solution of drinking, waste and distilled waters, lead me to the following conclusions:

1. The reaction always appears when nitrous acid is present.

2. The color reaction cannot be misunderstood, and does not occur under other conditions, such as the presence of chloride of iron, nitric acid, and other oxidizing agents, alone. When any one of these, as the iron salt, is present in larger quantities, the reaction still occurs, only its color is a deeper claret.

3. The grade of sensitiveness of the reagent for a sharp eye is 1:300,000,000 (calculated for nitrite of sodium).

4. When there are only traces of nitrous acid present the test is best made by daylight.

5. The reaction is more delicate than that of the other tests, and appeared where these latter were no longer seen. Thus the limit of the iodid of potash-starch test was at 1:1,000,000, calculated also with sodium nitrite.

6. I found it very convenient to be able to combine the qualitative test with a quantitative determination by comparing the color tint after the lapse of one hour with that given by known dilutions of normal nitrite solutions.

7. The maximum depth of the claret color was attained in half an hour.

The unreliability of the zinc iodid and iodid of potash-starch

*Abstracted from the "Zeitschrift für angewandte Chemie," Nos. 10 and 17, 1900.

reactions need not be recapitulated. No disturbing influences were found to affect the demonstration of the presence of nitrous acid by the Erdmann test, not even the presence of oxidizing combinations.

The author then gives two tables embodying his results with the test with pure water, very dilute sodium nitrite solutions, and ordinary drinking and drainage waters. They show that positive results were obtained in the presence of nitrites in cases where, for example, the iodid of potassium-starch test failed entirely. The reaction undoubtedly enables us to make a rigid examination of any questionable water.

He sums up the valuable properties and advantages of the Erdmann reagent as follows: It is at least equal to the Griess test in sensitiveness, and surpasses all the other tests in that respect. The slight violaceous fluorescence is not a disturbing element with a proper technique, to be detailed later, and is present also in the Griess and Riegler tests, no matter whether the reagents are kept together or separately. And, finally, oxidizing agents have no special effect, even the yellow color given by ferric chlorid being covered by the claret hue developed by the presence of nitrous acid ($N_2 O_3$), and simply making the red less pure in tone.

Dr. Erdmann has lately proposed the employment of p-Amidobenzoic-acid-ester, instead of sulfanilic acid, as diazotizing even more rapidly than the latter. It takes five instead of ten minutes for diazotization, reaching the height of the reaction in one hour. Mennicke believes it to be sharper than the older reagents. He keeps the reagent dissolved in 50 c.cm. (1 2-3 ounces) of aqua redestillata in a hermetically sealed cylinder; and by comparison with this he can recognize the slightest changes of color, and appreciate the extreme delicacy of the Erdmann reaction. The testing is done in a similar glass stoppered cylinder; and thus atmospheric influences upon the reagent, which cause even distilled water to give a slight violet-heliotrope coloration in time, are entirely excluded. If there is more than a minimal trace of nitrous acid in the water the test can be made in an open beaker.

The length of time, one hour, required before the action reaches its maximum intensity, can hardly be regarded as inconvenient, since both the qualitative and quantitative tests are made at one and the same time.

The precipitation of coloring matter which is so troublesome in the Riegler and Griess tests, does not occur with that of Erd-

mann; and the latter has the additional great advantage over them that a colorimetric test can be made with readiness and certainty by its means.

And finally, the Erdmann test in solution does not need to be preserved in the dark.

Comparative quantitative tests of the various reagents showed that the Erdmann test was sensitive to 1 part of Na NO_2 in 2,000 millions; the starch-iodid reaction to 1 in 200 millions; the Griess reaction to 1 in 400 millions; and the Riegler reaction at the utmost to 1 in 200 millions.

The author then gives a series of tables of these comparative tests, which clearly show the advantages and superior convenience of that of Erdmann. They demonstrate that that test gives results when other reagents fail entirely.

Mennicke concludes by stating that the Erdmann reaction for the detection of nitrous acid stands at the head of the whole list, and that it is almost absolutely perfect. He recommends its further critical study.

CONSUMPTION OF CORN IN GERMANY.—Under date of September 11, 1900, Vice and Acting Consul-General Hanauer, of Frankfort, writes as follows:

"Indian corn does not mature when planted in Germany and other countries of central and northern Europe. Since 1891, when Europe imported but 23,000,000 bushels of this grain from the United States, its use as cattle feed has steadily grown, and last year's imports from the United States alone aggregated 189,000,000 bushels. Of this, 45,250,000 bushels went to Germany, which country also imports small quantities from Turkey and Roumania. If our exporters were to make energetic efforts to educate the European people to the various uses of Indian corn as a palatable and wholesome article for human food, our exports in corn meal and corn would attain astonishing proportions and become of great benefit to the poor working classes of Europe. A commencement might be made by introducing corn cakes, mush, hominy, corn bread, etc., in the 'people's kitchens' of the large cities in Europe, where a cup of coffee can be had for a small sum—here in Frankfort for 5 pfennigs (1¼ cents).

TUBERCULOSIS AND LEGISLATION.

By CLARK BELL, ESQ., LL.D., President of the Medico-Legal Society.

Tuberculosis has been aptly termed "The Scourge of the Human Race."

The most important subject at the opening of the new century, the one that directly threatens the lives of the largest number of human beings on the globe, is that dread spectre which faces the race from the cradle to the grace, that terrible, devastating, and merciless disease, which wastes mankind by a slow, lingering death; that has increased in volume until it now heads the list of mortality among many of the races that people the earth. No one cause sweeps from life such a large number as does consumption. We have stood as a race until the very recent past, waiting and wondering on whom its summons would fall, and not unlike the prisoners in the French Revolution, awaiting in turn the selection of the victim, to a more terrible death than that of the guillotine; because that was more merciful, in that it was swift and instantaneous. Until recently the medical faculties of all the world, however they may have differed on other questions, have been united in this: that consumption could not be cured—save the voice of "the retired clergyman whose sands of life had nearly run out," of which we heard in our childhood days—medical science has offered no panacea, no cure for this fell destroyer.

The question of all questions in the interest of the human race; the question of the hour is: How can the ravages of tuberculosis be stayed? How can it be averted? From any standpoint from which it can be viewed, the most important factor in the solution of this grave and important problem rests on preventive legislation. The ablest thinkers in the world, in all countries, are coming to the conclusion that no other means are so full of hope and success as this. It becomes, then, the most stupendous question in legal medicine that has ever been brought to the consideration of the professions of law and medicine.

The Canadian Conference.

His Excellency the Earl of Minto, Governor-General of the Dominion of Canada, at Ottawa, on February 14th, last, in opening the conference on the "Prevention of Tuberculosis," at which

the ablest men of the bar and in the medical profession from every Canadian province were represented, said:

He hoped the expert information brought to bear at the discussions might not only assist the public to some knowledge of the dread disease which besets them, but would encourage the public to unite in one body to try and repel its ravages. Success must to a very large extent depend upon the assurance and the good-will of the public at large. Ten years ago the annual deaths from consumption in Ontario numbered 2,400. In 1889 they had gone up to 3,405. Of course, allowance must be made for the increase of the population, but even allowing for this, it was a very considerable increase. From 1887 to 1898 the total deaths from consumptive causes were 31,699, while the annual estimate for the Dominion was now between seven and eight thousand deaths a year. In the period from 1887 to 1898 the total deaths from small-pox were only twenty-one. The small mortality from small-pox was very encouraging, as showing what can be done by preventive measures.

Sir James A. Grant, M. D., the eminent physician who presided over that conference, and who was chosen president of the "Canadian Association for the Prevention of Tuberculosis," as a result of that conference with vice-presidents selected from the ablest jurists and medical men, two from each province, in taking the chair at the opening of that congress, said:

That this was the twentieth year of the discovery of the tuberculous germ. The yearly death rate in this country was estimated at between seven and eight thousand, and in the neighboring republic about 150,000 annually. In Great Britain and the Continent of Europe, the results from this malady were not encouraging.

Sir William Hingston offered the first resolution, which had been sent out for discussion, as follows:

Whereas, in view of the general prevalence of tuberculosis in Canada, and of the very high mortality caused by the disease; in view of the communicable nature of the same, and of the constant and continued dangers caused by its chronic and unusually prolonged course, during which a patient may infect not only one house, but many other places of temporary or permanent abode; and especially in view of scientific facts going to show the curability as well as the moderately contagious character of the disease in its early stages;

Resolved, that in the opinion of this conference, which represents the governments and people of every part of Canada, it is the duty of every government, municipality and individual citizen, to adopt organized methods for lessening the spread of a disease which is causing, directly or indirectly, probably one-fifth of the total deaths in the Dominion.

He supported it and in the course of his remarks, said:

Consumption is not an hereditary disease. Tuberculosis is not confined to the lungs; we may have it in the liver, in the kidneys, the bones, in the knee-joints. He had seen it on the lips of a young lady teacher who scratched her lip with a pencil. The bacillus enters the lungs from the air, if people are not careful. They spit indiscriminately. The germ in the sputum lives for months, and when dry is disseminated by the atmosphere. It is scattered by ladies with long skirts, by much handled bank bills, etc. It is preventable; it is curable, not in the last stages, but in the early stages. For the consolation of those who could not afford it, he said change of climate was not so important, and friends should never consent to people going to Florida, and afar off, to die away from home.

The motion was seconded by Dr. Lafferty, of Calgary. He said: The disease is curable, and emphasized the importance of the duty devolving on governments to establish sanatoriums properly located in parts of the country where the climatic conditions were favorable. The Alberta district, where he came from, was being overrun by outsiders suffering from this disease looking for health, and unless restrictive measures were taken by the government, the district would have to take strong measures to protect itself. He thought the Dominion government should pay for the erection and controlling of sanatoriums.

The resolution, after extended discussion from the ablest jurists, as well as medical men from every province of Canada, was unanimously adopted.

The leading men of England, realizing the magnitude of the danger of the dread disease to the British nation, have announced a congress to be held in London in July next, at which the late Prince of Wales had consented to preside, and which will receive his cordial support now that he has come to the English throne. This congress will embrace the ablest statesmen, publicists and medical men of Great Britain, and it is announced that the governments of several nations, beside our own, are to be invited to

send delegates to that convocation, where the same question will be the uppermost one for discussion.

The Medico-Legal Society has felt that it was a neglect of duty on its part not to bring this subject up for action and discussion, and the congress to be held by the American Congress of Tuberculosis, in joint session with the Medico-Legal Society on the 15th and 16th of May, proximo, at the Grand Central Palace, in the metropolis of the nation, was the result of what has seemed to be a public necessity, in an hour of great public urgency, and in the performance of a duty that could not be ignored.

The officers of the American Congress of Tuberculosis, which had been organized in February, 1900, on invitation from the Medico-Legal Society, consented to this joint congress, and the preliminary announcement was ordered to be sent out by the officers of both organizations, of which the following is a copy:

"NEW YORK, February 6, 1901.

"It is announced that the Second Annual Meeting of the American Congress of Tuberculosis will be held at the Grand Central Palace, in the City of New York, on the 15th and 16th days of May, 1901, in joint session with the Medico-Legal Society of New York. That a dinner will be given to the members and guests. It is proposed to open a Museum of Pathology, Bacteriology and Public Health, with an exposition of electrical and other instruments, with the use of the power furnished at the building, which it is intended to be made most complete, educating and attractive, of all appliances used in any way in arrest or treatment of the disease.

"The leadings manufacturers have enlisted already, many of them, and the display will be on an extensive scale. The objects of the Congress will be to exchange the information and experience gained throughout the world, as to forces and methods most available for the extermination of consumption, which at the present moment is a disease the most destructive of human life of any that now afflicts humanity.

"The medical profession of all countries will be invited to contribute papers to be read before this Congress in their behalf, by a committee selected for that purpose, in case of the inability of the author to attend, and to enable those who could not hope or expect to be present, to participate in the work and usefulness of the body. As the questions to be discussed involve remedial legislation, legislators, lawyers, judges and all publicists who take

an interest in the subject are also invited, both to enroll and contribute papers.

"The papers should be forwarded to the secretary on or before the 15th day of April, and the title of the papers forthwith, to facilitate classification, as the time is short. The enrolling fee will be $3, entitling the member to the Bulletin of the Transactions free.

"The complete list of officers and committees will be announced as early as possible. The preliminary announcement is now made to obtain the names of those who will co-operate in the Congress, and an early classification of the subjects and titles."

The Medico-Legal Society directed that the governors of the several States and Territories, and of the provinces of the Dominion of Canada, should be invited to send at least three delegates from each State and province, which has been done.

The following letter has been sent to the governors of the States and provinces:

MEDICO-LEGAL SOCIETY,
OFFICE OF THE PRESIDENT, 39 BROADWAY,
NEW YORK, February 20, 1901.

Honored Sir: Preventative legislation against the spread of tuberculosis seems to be a grand factor if not the most effective of all means left at our command in averting what has come to be "the scourge of the race."

In many of the States and Provinces legislation favorable to the construction of State hospitals and sanatoriums for the care and treatment of consumptives has been secured. In many more it has been considered and is now under contemplation.

It has arrested the public attention. It is a fruitful, a terribly pathetic, even tragic question. It is the problem of the hour.

I enclose you the preliminary announcement of the American Congress of Tuberculosis, to be held in the city of New York on the 15th and 16th of May proximo, at the Grand Central Palace, in Forty-third street.

I am authorized by the Medico-Legal Society, at its meeting held on the 20th inst., to invite the governors of the several American States and Territories and the governments of the Central and South American States, the State medical societies of the United States and the Canadian provinces of the Dominion of Canada to

name three or more delegates to attend that congress and to present their views in regard to the best legislative means of prevention.

Will you kindly advise me of the name and address of such delegates as you may name as early as possible, so that correspondence may be opened with them, as the time is short? Very faithfully yours, CLARK BELL.

Invitations have been sent also to a large number of eminent men in our own and foreign countries to attend and participate in the congress or to contribute papers to be read and discussed at the session.

The invitation has been made to the entire medical and legal professions to co-operate, and to the officers of the State boards of health throughout the United States and the Dominion of Canada.

The following letter has been sent to a large number of prominent men of all the professions, with the intention to publish such replies as are received in time to accompany this address before the congress, not only to have it sent, with such replies as are received; a time sufficiently long to enable the same to reach the most careful and competent students of the science in all professions:

MEDICO-LEGAL SOCIETY,
OFFICE OF THE PRESIDENT, 39 BROADWAY,
NEW YORK, March 6, 1901.

Dear Colleague: I have the honor to mail you herewith the preliminary announcement of the American Congress of Tuberculosis for its session, May 15th and 16th, to be held at the Grand Central Palace, in this city.

I assume that you are advised of the action of the conference held at Ottawa, Canada, February 14th, 1901, and of the organization of the "Canadian Association for the Prevention of Tuberculosis" at that time, and its action. If not, and you advise me, I will forward to you a copy of its transactions. I also assume that your attention has been called to the "British Congress of Tuberculosis," to be held in London July next.

Dr. Bryce, Secretary of the Board of Health of Ontario, has sent me the programme of the Ottawa Conference of February 14, 1901, and of the Ontario act respecting "Municipal Sanatoria for Consumptives" (Cap. 57, Stat. 1900), and the action of the Ottawa Provincial Board of Health of June 15, 1900.

I have the honor to invite you to co-operate in the work proposed for May 15th and 16th next and to enroll you in this congress and to contribute a paper to be read before that body.

Invitations have been sent to the governors of the several American States and Territories to send each three or more delegates to this congress and to the governors of the Canadian provinces also. Those who have as yet replied say that they will comply with our wishes.

The most important factor in the solution of the problems that confront us seems to be how to utilize preventive legislation and how to frame it so as to be most practical and effective on the one hand and least objectionable on the other.

It is, or seems to be, as necessary to have an intelligent and strong public sentiment, to secure the passage of preventive measures, as it is to enforce them when adopted.

It may be wise to ask for an expression of your views as to some of the subjects that are to be discussed before this congress, and that some preliminary questions shall be sent out relating to the vital questions of the hour, and I will feel obliged for your opinion for the benefit of those who desire the aid of advanced thinkers and experienced observers.

1st.—What importance do you attach to preventive legislation as a factor in diminishing the spread of tuberculosis?

2d.—Assuming the importance, necessity and utility of preventive legislation, how can the public be best educated and its sentiment aroused sufficiently to secure the passage of preventive laws and their enforcement after they are passed?

3d.—Which would you regard as for the best interest of the people:

(1) Legislation authorizing the employment of drastic measures for the enforcement of the necessary regulations, or

(2) A broad policy of education of the masses as to the cause, the danger and the remedy for tuberculosis?

Kindly reply to this letter at once, because the time is so short, and if you will contribute a paper and enroll in the congress do so.

Please send your reply to the questions as early as possible, so that I can publish your answer as a part of my contribution to the congress, to be sent at least a month before its session to delegates and in time to awaken interest and arouse discussion upon the subject at the congress itself. Very faithfully yours,

CLARK BELL.

The Government of the United States has been advised of the contemplated congress, and its co-operation solicited, and a request that the Government and its army and navy departments, especially the surgeon-generals of both and their attaches and offices, be represented at the congress.

As to the legal propositions involved in what may be considered as of the greatest practical force and effect in the matter of preventive legislation, the question rests strongly upon the proposition, upon which the medical world is now substantially in accord—

Is tuberculosis an infectious or communicable disease?

How far can legislation avert it, framed with a view of arresting the spread of the disease, by regulations, the enforcement of which would result in diminishing the opportunities and the facilities for its being communicated from one person to another?

The police power of the Government has been held to exist, and it no doubt does in all cases where a communicable disease is liable to or is in danger of spreading, and this liability or danger can be averted, lessened or diminished by stringent regulations.

To obtain the consent of the people to the adoption of stringent and drastic laws in such cases requires the education of the public mind among the more thoughtful and influential members of the community.

Preventive legislation must, to secure its enforcement, be sustained also by a strong and educated public sentiment.

The action of the congress will not be limited to the subjects presented by this paper alone.

The programme of work will be broad enough to consider all questions relating to tuberculosis, its cause, cure, treatment, climatic influence and every question in any way related to it.

The programme will be a classification of its subjects, and a large number of enrolled members will take part in the discussions, and this paper is sent out in advance to awaken, arouse and incite to that discussion.

WEIGHING THE SUNLIGHT.

Professor LANGLEY'S Work.

Sun spots have not been regarded with much respect by astronomers hitherto, because of the doubt as to whether they really exert

any influence over the weather. Undoubtedly, however, they will receive more attention in the immediate future than ever before, on account of the remarkable fulfillment of the prophecy of a well known astronomer as to the summer that is just past. He gave warning nine months ago that the summer of 1900 would be one of unprecedented heat—that August would be even hotter than July, and that September would break the thermometric record. These forecasts having been fulfilled, it remains to be seen whether this scientific authority will be proved correct in his future vaticinations, which are to the effect that next summer will be hotter than the last, and so on progressively until 1904, when the maximum of torridity will be reached.

The astronomer quoted derives his data from the observation of sun spots which, as well as can be ascertained, are vast vortices of fire on the surface of the solar orb. They are so tremendous in point of size that one of the smallest of them could swallow a planet like the earth in a twinkling, without showing any unusual signs of disturbance. It is known that these sun spots are hotter than the rest of the surface of the celestial luminary, and something more definite about them is likely to be ascertained before long by the application of the new science of astrophysics and through the aid of that marvelous instrument called the bolometer, invented by Professor S. P. Langley, secretary of the Smithsonian Institution.

"Astrophysics is a new branch of astronomy," says Professor Langley. "Its object, in the case of the sun, for example, is not to mark the place of that luminary in the sky, but to find out how its heat is distributed, and how it influences, not only the seasons and the farmer's crops, but the whole system of living things on our planet. For it has lately been proven that, in a physical sense, the sun first literally creates all animals and planets, and then modifies them in every conceivable way.

"We have found that the sun accomplishes these marvels without yet knowing in most cases how it does so. We are sure that if we could acquire this knowledge, it would form a scientific basis for meteorology and enable us to predict the years of good or bad harvests. What we need to learn is just what the nature of the influence of the sun upon sublunary affairs is, and the bolometer is being utilized to help us gain this knowledge.

"If you hold a glass prism so as to let a beam of sunshine pass through it, you will find that it throws upon a blank wall or screen

a beautiful rainbow-like spectrum, with a band of red at the lower end and a band of violet at the upper.

"This is the result of breaking up the white light of the sun into its component hues. But it has been ascertained that the spectrum aforesaid represents only a part of the rays contained in the sunbeam that passed through the prism, because the human eye, being an imperfect organ, is unable to distinguish what is now below the red and above the violet. Beyond both extremities of the visible rainbow are regions of unknown colors, such as no man has ever beheld.

"What these invisible colors may be like nobody can imagine. It may be that, though unseen by us, some of them are perceptible to certain other animals, just as some sounds, perfectly audible to certain insects, are unheard by the keenest human ears. It is possible for man, however, to make an instrument with nerves more sensitive and senses more delicate than his own, and such an instrument is the bolometer. By its aid Professor Langley has explored these mysterious regions of unseen colors, mapping them in detail. Taking the visible spectrum at a length of three feet he has traced the path below its red end for a distance of forty feet.

"In the region below the red most of the heat rays of the sun are gathered. In fact, three-fourths of the entire heating energy of the solar orb is concentrated in that invisible arena, which may thus be said to have a controlling influence in the growing of the farmer's crops. as well as in the creation and development of all other living things on earth. Up beyond the violet end of the spectrum, on the other hand, are assembled most of the chemical rays upon which the photographer is obliged to depend for the pictures he makes with the great artificial eye called a camera.

"It is the dark region of invisible heat rays below the red that has so much to do with the weather. If its mysteries were understood the daily forecasts would no longer be mere guesses, but certainties, at least approximate, even for a long time ahead. Above the violet, where the chemical rays are gathered, is a cold area, the rays conveying no heat that is appreciable. But the part of the spectrum beyond the red is many times as long as that beyond the violet, and the discoveries to be made by exploration are probably far more interesting.

"The present United States astrophysical observatory is located immediately behind the Smithsonian Institution. It is a tempor-

ary frame structure, designed merely to accommodate for a while the complicated mechanism of the bolometer. On the outside of it is a massive instrument called a siderostat, which consists most importantly of a disk-shaped mirror. The mirror is controlled in such a manner by clockwork as to present at all hours its face to the sun, reflecting a sunbeam directly into the mouth of a long metal tube. The tube contains a lens which throws the beam into the building wherein the main apparatus is housed.

"The beam, having entered the building, passes through a great prism, which is made, not of glass, but of rock salt. For it must be explained that glass is opaque to the rays of the spectrum below the red, whereas those rays pass readily through a crystal of rock salt, which should be at once large enough and clear enough for this important purpose." Prof. Langley prosecuted a search all over Europe and at last found crystals that would serve his purpose in the famous salt mines of Baden. Recently, however, through the courtesy of the Russian government, he has succeeded in obtaining a few superb blocks from the Russian salt deposits, and the finest of these have been cut into prisms by a celebrated optical expert.

The work has been done with as much painstaking care as is commonly expended upon the grinding of lenses for the greatest telescopes. It was needful, indeed, inasmuch as the bolometer, presently to be described, is a mathematical instrument, pure and simple, and the slightest error in any part of its mechanism modifies seriously the accuracy of the results obtained. The prism, then, through which the sunbeam passes has an angle of exactly 60 degrees, and the picture which it throws of the solar spectrum or rainbow is beautiful. This point, however, has nothing to do with the matter. It is the business of the machine to record the temperature of various parts of the spectrum, more particularly those portions which are invisible to the eye, and this is accomplished through the aid of a thread of platinum much finer than a human hair.

Upon this thread the prism throws the spectrum, which is made to march across the tiny metal filament, while through the latter a current of electricity is continually passed. It is an old story that the electrical resistance of substances varies directly with their temperature, so that in order to find out the temperature of the platinum thread it is only necessary to ascertain the degree of electrical resistance which it may have at the moment. This deter-

mination is made by means of a very remarkable apparatus, presently to be described, which is so extremely delicate that it will record a variation of a one-millionth of one degree Fahrenheit.

Outside the building is the big machine pumping sunshine into the long tube. A weight of 1,000 pounds, hanging in a well below the apparatus, keeps the mirror facing the sun all the time, and so throws the never failing beam, except when clouds obscure the sky. The beam passes through the rock salt prism, and the spectrum of the colors is made by a peculiar mechanical arrangement to march across the platinum thread. When the red has gone by, the invisible infra-red follows, and steadily progresses, while no indication of the procession is given, except by changes in the electrical resistance of the thread—changes which are recorded by the delicate instrument about to be described, and which indicate alterations of temperature.

The instrument in question is the most wonderful thing in the world, in its way. It consists of a tiny balance, the beam of which is a thread of spun glass finer than the finest hair. In the middle of the beam is a concave glass mirror only as big as a pin head, and yet so perfect in form that it would fit to the thickness of a shadow upon a sphere six feet in diameter. The weight of the mirror is two and one-half milligrammes—about equal to that of the hind leg of a fly—and it is fastened to a square piece cut out of the wing of a dragon fly. The whole affair is suspended from a fiber of quartz crystal two feet long, and so slender as to be almost invisible.

A single ray of light is admitted through a small aperture in such a manner as to strike the face of a tiny mirror, which, reflecting it, throws a bright dot upon the wall. Where the dot falls there is a scale of inches, and it runs up and down the scale as the beam of the balance inclines. Now the beam is made to incline one way or the other by the slightest change in the temperature of the platinum thread already spoken of, with which, though at a long distance, it is connected by electric wires. Thus, simply by watching the dot of light move along the scale, one is able to observe the alterations in the temperature of the platinum thread.

But mark! To make the thing complete, there is one more very interesting process. When desired, the piece of wood on which the scale is marked may be thrown back out of the way, and then the dot of light will fall upon a sensitive photographic plate, which is kept constantly moving from left to right. Thus the light dot

is made to trace a line representing by its ups and downs the rises and falls in the temperature of the platinum thread. After a while the plate is taken out and developed like any other photographic negative. A print is made from it in the ordinary fashion, and this serves as a permanent record for that part of the invisible spectrum which has been marching across the platinum thread during the time of the observation.

The spun glass balance stands upon a pier of brick and stone, with rubber cushions between the stones, so as to reduce jar to the minimum. To the ends of the tiny beam are attached two objects the size of large pin-heads. Each of them is a group of ten rods of steel (the middle parts of as many fine cambric needles) mounted on a disk of mica. The rods are set parallel to one another, and each group is magnetized to the same degree exactly, but in opposite directions, so that the beam shall not have a tendency to turn to the north. Nevertheless, notwithstanding all these precautions, footfalls outside of the building disturb the accuracy of the results obtained.

The region of invisible colors beyond the violet and beyond the red is mapped with the utmost accuracy, with the aid of observations made in this way. The maps are horizontal bands, crossed at intervals by black lines. These black lines, in the infra-red, are cold spaces, whereas in the ultra-violet area they indicate intervals between groups of rays that have chemical energy. Above the violet the light rays are too short to be detected by the human eye, while below the red they are too long and slow. Hence the invisibility of those regions of the solar spectrum to us.

Professor Langley believes that the sun really deserves more of our attention than it receives—that it has more to do with our welfare and with the current affairs of this world than we imagine. He is of the opinion that the solar orb would appear blue to anybody who should view it outside of this planet's atmosphere. As for the bolometer, he has been using it recently to find out something about the temperature of the moon, and another interesting experiment he has made was with its aid upon the light of the famous tropical fire-fly, *Pyrophorus noctilucus*, the visible spectrum of which seems to be much shorter at both ends than that of the sun.—Washington "Post."

ROAD CONSTRUCTION AND SYSTEM OF CONTROL.*

By A. W. Campbell, M. Can. Soc. C. E.

The volume of literature respecting road construction and maintenance has assumed very considerable dimensions, and is rapidly increasing. This branch of engineering cannot be said to present problems of very serious difficulty, and the underlying principles are well understood. They have been very largely applied in the construction of Canada's magnificent system of railways, which are, in effect, but the trunk highways provided with tracks of steel, and steam in place of animal traction. A study of the map of the early common roads in Ontario, prior to railway construction, will indicate the remarkable degree to which railways have followed the lines of the first main roads.

The most famous roads the world has known were built 2,000 years ago, by the Romans, many of which are still in use. So durably have they been built that, in Spain, and other European countries where they exist, they are believed by the peasantry to be of supernatural origin. They commonly range in width from 40 to 120 feet. The method of construction was to first excavate to hardpan. This was filled with layers of sand, stone and concrete, up to the required elevation; and this was maintained in a direct line and with easy gradients, at an enormous expenditure of labor on cuts and fills. While the permanency of these roads may receive our admiration, yet they can scarcely command respect, built as they are at such a prodigal waste of energy.

What a road must be, to be a good road, should not be misunderstood. A good road is one best answering, in a broad sense, the requirements of economic fitness. Money spent on road construction is an investment from which adequate returns are to be expected. A road the cost of which is excessively great, in proportion to the use made of it, however smooth, hard, easily traveled and durable, measured by the foregoing rule, may be far from being a good road. On the other hand, a common dirt road may be a good road if it is made and maintained so as to properly meet the needs of traffic. In Canada, therefore, we do not need English, French, nor Roman roads, but we want Canadian roads, each mile adapted to local requirements and conditions.

*Read at the meeting of the Canadian Society of Civil Engineers, October 25, 1900.

It is impossible to make a fixed model for a road to meet all conditions. There is a tendency on the part of many very good authorities on road-making to lay down hard and fast rules based on their own experience. This is a very great mistake, for in no other branch of engineering, perhaps, is there so much opportunity for the exercise of individual judgment. There are such infinite gradations in climate, in the character and extent of travel to be served, the nature of the soil over which the road is to pass, the opportunities and need for drainage, the quality of metal obtainable, that there is but one way to skillfully meet these conditions.

It is to thoroughly understand what a road consists of, and the physical properties of the materials which are to be employed in reaching this end.

A road consists of a strong foundation capable of supporting any load or weight which may pass over it. This foundation must have a surface covering which will resist the wear of the feet of horses and action of wheels, remaining smooth and hard; a covering which will also prevent water from passing readily through to the foundation. In the road, therefore, we have a structure consisting of a foundation, floor and roof.

The practice of the ancient Romans, in providing a foundation, was, as we have seen, to excavate to hardpan, the place of the excavated earth being taken by layers of hard material. But a little more than a century ago, first in Switzerland and France, then in England, this plan was greatly changed, by the discovery that the natural sub-soil could, in the great majority of cases, be made sufficiently strong to support traffic by the simple expedient of keeping it dry. This is the fundamental principle of what is generally known as the "macadam" road.

The name is commonly applied to any road surfaced with broken stone, and in this respect is a very unfortunate misnomer. It is the neglect to provide a dry subsoil that is the greatest cause of the unfortunate condition of roads throughout Canada to-day. The roads of to-day are, in effect, but a repetition of the English roads as they existed before the time of Macadam; they are the roads which the system of Macadam displaced.

A road bed in which sub-drainage is not sufficiently provided is the antithesis of a Macadam road. The importance of keeping the subsoil dry cannot be too thoroughly impressed. Clay in thick beds, when dry, will support from four to six tons per square foot of surface, according to the quality of the clay. If only moder-

ately dry it will support only from two to four tons per square foot of surface. If the clay is wet and soft, it will yield to almost any load. Gravel, if well compacted, forms a much stronger roadbed, is less yielding to the action of moisture, and for this reason, even for a thin surface coating, strengthens the road somewhat. But the real strength of the road must lie in the subsoil. Vegetable moulds and alluvial soils are weak, having a sustaining power of only one-half to one ton per square foot, and for this reason it is well to remove such soils, securing, if possible, a gravel, clay or sand foundation.

A dry subsoil becomes, too, of paramount necessity in a cold and humid climate, such as prevails throughout Canada for a considerable portion of the year. The injury done to roads by frost is caused entirely by the presence of water. Water expands on freezing, and the more there is under a road, and above the frost line, the greater is the injury. In freezing, the particles of soil in immediate contact with the water are first compacted. When room for expansion ceases within the body of the soil itself, owing to its saturated condition, the surface is upheaved. When thawing takes place, the subsoil will be found honeycombed, ready to settle and sink beneath traffic. It is, therefore, of the utmost importance that the soil should be relieved of all water of saturation as quickly as possible by underdrainage. The impassable condition of the roads during the spring, often axle-deep with mud, is to be attributed very largely to a wet subsoil, which has been honeycombed in this manner.

The making of a strong foundation thus resolves itself into a question of underdrainage, and the means whereby proper underdrainage is obtained must be adapted to the manner in which water finds its way under the road, and the nature of the soil. A soil retains in its texture, by capillary attraction, a certain amount of water. In the case of a plastic clay, which will absorb nearly one-half its weight and bulk of water, the water retained in this way may be the cause of injury. In the case of gravelly, sandy, or other porous soil, it is necessary to remove only the water held by hydrostatic pressure in the foundation of the road. The effect of this is, that, with a clay subsoil, underdrains are nearly always beneficial in securing a strong foundation, and are necessary for traffic of even a moderate degree. With porous soils, on the other hand, the necessity and means of drainage will depend upon the height to which water rises in the foundation, and the direction

from which it comes. When a strong foundation is needed, these underdrains should be three or four feet below the surface of the subsoil. Their location with respect to the road should be varied with circumstances.

The most effective type of drainage employed is a system in which there is a tile drain on each side of the roadway, underneath the open gutters, with V-shaped drains at intervals, from the centre of the roadbed to the side drains. From this the scale descends to drains at the sides of the road only; then a drain at one side only, or in the centre of the road; then only an occasional drain at springy or damp points.

It is of advantage to understand the manner in which the underdrains act in different cases. With porous soils, in which the water rises under hydrostatic pressure, the water enters the tile from below; just as water rising in a vessel finds an outlet in the side or flows over the top, so the underdrains supply the necessary outlet for this excess moisture at a proper depth from the surface; it "lowers the water line."

With clay the process is different. Absorbing and holding, as it does, like a sponge, a large quantity of water, drains are less effective, but none the less necessary. The cracks and fissures which appear throughout the surface of a sun-baked clay soil during the summer drought afford a clue to the action of underdrains upon such a soil. As the clay yields up its moisture, it shrinks, is torn apart. These fissures, commencing at the drain, spread and branch in different directions, and each fissure thus becomes a new drain leading water to the tile. This process goes on, the fissures become filled with sand, vegetable and other porous matter, so that they assume a degree of permanency, and, in clay soils underdrainage is more effective after several years than at first.

The metal covering placed over the earth foundation should perform two services. It should be waterproof, so as to prevent water from readily passing through and softening the subsoil; and it should form a smooth, unyielding and durable surface covering to facilitate traffic and resist wear. The effectiveness of the stone covering as a water protection is increased by crowning the roadway so as to throw the water to side drains or gutters, which, in turn, carry the water from the road.

The varieties of stone which bind most readily, as a rule, will form the better protection from water. But in order to be a good protection, the road surface must be smooth, without ruts or hol-

lows, otherwise the flow of water to the gutters will be impeded. The water will then rest in the wheel tracks or depressions, will percolate through the surface, and traffic will immediately create injury. The stone, therefore, which binds readily may not be a good covering, unless it is tough enough to resist wear and maintain a smooth surface. While the name stands for much, it is not a guarantee, by any means, of the usefulness of stone for road purposes, since each variety may vary much, even in the same quarry. The French Department of Public Highways has adopted a scale from 0 to 20, showing the quality of different kinds of stone. This list indicates:

Trap	varying	from	16 to 20
Quartzite	"	"	11 to 19
Quartz	"	"	10 to 18
Limestone	"	"	5 to 17
Gneiss	"	"	5 to 17
Granite	"	"	3 to 16

These rocks are among the most common in Canada, and the list serves to show the wide degree to which their usefulness for roadmaking may vary. Limestone is most frequently criticized, but French practice shows that it may rank among the best; while granite, so frequently extolled, may be very poor indeed. Limestone, while it is very apt to be soft, is one of the best building stones, and for this reason a combination of moderate toughness with good building qualities may result in an excellent stone for a macadam road. Trap is universally regarded as very reliable, since it combines both toughness with fair cementing properties. The difficulty with granite, on the other hand, is that, while very hard, it wears into a coarse, sandy material, which refuses to bind.

The "binding" of a road covering is a matter very frequently discussed. Some road engineers advocate the use of a foreign binding material mixed with the stone, such as sand, loam, or even clay. It is generally conceded by the best authorities, however, that the less foreign material incorporated with the stone the better. The best roads to-day are bonded by intermixing with the broken stone the chips and dust created in crushing, and by thorough rolling. The dust of stone suitable for roadmaking will form a cement which will unite and re-unite after being broken, and added to this is the mechanical clasp which the stones assume after sufficient rolling.

The use of sand as a binder, while it will lessen the amount of rolling required to produce a hard surface, tends strongly to injure the durability of the roads. When these foreign binders are used, the road is more easily permeated by water, and in wet weather, such as we have to guard against stringently in a Canadian climate, the bond is less perfect, and the road is more readily rutted, the presence of sand having prevented as strong a mechanical interlocking of stones.

The quantity of stone required to form the surface covering will vary with the strength of foundation obtainable and the nature of the traffic to which the road will be subjected. If, because of moisture or the nature of the soil, the foundation is lacking in strength, or if the traffic is to be very heavy, the Telford system may be employed, whereby a layer of large stones is first placed by hand over the road, and this is then covered with broken stone. When a Telford foundation is laid, the principal matter to observe is to place the stones on edge, either at a uniform height, or graded from the centre to the side, the highest at the centre. They should be given an even bearing, projecting tops should be chipped off, and spalls wedged into the interstices. If the stones are laid flat, they do not retain as firm a bearing, and are apt to rock, when uneven settlement will occur.

The depth of broken stone to be placed over a Telford foundation need rarely exceed six inches in thickness, the foundation itself having a thickness of eight or nine inches. Without the Telford foundation, the thickness of stone may range from six to twelve inches, according to circumstances. Less than six inches has been used successfully, but in such cases the foundation must be of unusual strength, such as a very gravelly soil would produce. When there is reason for the depth of the stone reaching or exceeding twelve inches, it generally indicates the necessity for a Telford foundation.

The broken stone should be placed on the road in layers of from 2 to 4 inches in thickness, according to the size of the stone, and each layer thoroughly rolled before the next is placed above it. The stone, too, should be first graded according to size, and the coarser placed in the bottom. When fine and large stones are intermixed, the surface will wear less uniformly, the smaller stones wearing more rapidly than the larger; the large stones, too, obtain a less firm bearing and are apt to work loose; so that, unless the finer stones are placed on top, the surface is apt to become rough, particularly in dry weather.

The preliminary earthwork, in providing for the reception of the broken stone, will vary greatly in extent. A cheap form of country road can be built by first crowning the earth subsoil by the use of a grading machine; then reversing the process, and, instead of bringing the earth in, cutting off the crown, turning it outward to form shoulders for confining the narrow bed of metal. From this method, the extent of earthwork will increase until the widest and most elaborate form of macadam road is reached, necessitating the removal of much earth to receive the stone.

The location of roads is a matter with which, unfortunately, the Canadian engineer has not much to do. They follow, as a rule, the lines of original survey, and any effort to better their location is apt to be met with much opposition, interfering, as it would, with boundaries of private lands. The location and grade are matters which should be considered together, and should be the result of a skilful compromise. They are not matters of at all so much importance with common roads as with railway construction, but should not be neglected. The better the road, and the larger the loads which are to be hauled over it, the more important grade and location become.

The grade for ordinary roads may follow the general surface of the country. So far from being a benefit, a long and constant grade is more fatiguing for horses than is a gently rolling surface. The highest permissible grade on a macadam road is 10.5 per cent.; an effort is generally made to prevent it exceeding 7 per cent.; while 3 per cent. is not objectionable. There should be at least sufficient fall to provide proper drainage.

The height of crown may vary with the quality of the road. An ordinary gravel road, when finished, may have a slope of one inch to the foot from centre to side. But a properly built broken stone road, when finished, should have a slope of about two inches to the yard, which, after a little wear and settlement, will be reduced to about half that amount of crown, or one inch to the yard. On hills the crown should be sufficient to prevent the water flowing down the road in the wheel tracks, which, if permitted, will quickly deepen them to ruts.

The use of machinery in road making is taking a prominent place, as in other branches of construction. Wheeled scrapers, road graders, rock crushers with screen attachment, steam and horse rollers are the more common. The grader is most useful on country roads of cheap construction, such as must serve a great proportion of Canada for a long time to come. The crusher is of

less universal value, but is gaining popularity wherever there is rock to be broken or coarse gravel or boulders to be treated.

A heavy roller is becoming more and more regarded as indispensable in building a macadam road, and the best results cannot be obtained without one. Unless a roller is used, the stone must be spread loosely on the road and left for traffic to consolidate. This is a slow process, causing much inconvenience to travel, and during which the earth and stone become intermixed. Earth mixed with stone, as previously pointed out, prevents the strong mechanical bond which clean metal will assume when the stones are wedged one against another. The particles composing this earth, in wet weather, too, move more readily around one another, the road surface is softened, and is more readily broken up. By the use of a roller, the earth subsoil should first be thoroughly compacted. Each layer of stone placed upon it should also be well consolidated. In this way a smooth, durable, waterproof coating can be laid over a firm foundation.

There are different kinds and classes of rollers. The horse roller, weighing six or eight tons, will do fairly well if a steam roller cannot be afforded, but the horse roller is not sufficiently heavy, and has to be used much longer on a given section than a steam roller to produce the best results. The feet of horses, in exerting sufficient strength to move the roller, sink into and disturb the road metal, and thereby injure the shape and quality of the roadway.

There is danger, on the other hand, of having a steam roller which is too heavy. A very heavy roller will sometimes sink into light or loose soil, force it ahead, and create a mound over which it cannot pass; this, however, may sometimes be overcome by spreading over the surface of the soil being rolled a thin coating of gravel. The same result will sometimes occur with an excessively heavy roller on a layer of loose stone. The heavy roller is more liable, too, to injure underground pipes, catch basins, culverts, bridges or disturb sidewalks.

For these reasons a roller exceeding ten or twelve tons in weight in some localities, where the soil is of a loose or sandy nature, is frequently not desirable. In districts where the natural soil is gravelly or of stiff clay, a heavier roller may be operated successfully, but some municipalities have found it necessary to use a light horse roller in consolidating the subsoil and first layers of stone. Nor, if the stone used in the construction of macadam road is of a soft nature, is a heavy roller, say of twenty tons, desirable even in

the finishing courses, as the crushing effect has been found in some cases to crumble and pulverize the stone rather than merely consolidate it. For new work, in which the dirt foundation must be rolled, a weight of twelve tons is generally the most serviceable; but for picking up an old roadway and reconsolidating it or for finishing a new work, fifteen tons is better. Where a municipality is to own only one roller it will be advisable to consider very carefully the work to be done before purchasing a roller of over twelve tons weight.

By proper attention and repairs the life of a broken stone pavement can be made continuous. The surface can be frequently rolled, improving it greatly. It can be scraped and swept, as are other pavements. When it begins to lose shape, the surface can be loosened up by means of teeth attached to the roller, a light coating of new metal applied, and then rolled down as well as when new. It is by such means as these that broken stone roadways can be made more economical and satisfactory than any other for roads and streets generally. This ease of renewal and repairs is a property peculiar to macadam, which renders it most suitable for general purposes. It forms a permanent basis and its perpetuation is merely a matter of repairs.

That the country roads throughout Canada are in an unfortunate condition is now very generally recognized. This, a careful study will disclose, is not wholly due to the fact that the expenditure upon them is small. It is rather due, in many districts at least, to the fact that the expenditure now made is mismanaged and misapplied, owing to the lack of method, and an ignorance of the principles of roadmaking on the part of those in charge of the expenditure.

In Ontario money and statute labor to a combined value of $4,000,000 are annually placed on the roads and streets throughout the province. This is obviously a very considerable amount of energy; it indicates the importance of the highway as a public work, and demands a proper system of direction. That such a proper system has been utterly wanting requires no assertion other than the proof given by the roads themselves. Not too soon can the prevailing opinion be cleared away that any and every farmer is a competent road engineer. There is imperative need of an early introduction of business and scientific principles in the management of Canadian roads.

The public may, no doubt, readily see that for every elaborate road system the services of an engineer are necessary; but they

have yet to learn that, wherever the possible expenditure is small, there is all the more need for conserving to the utmost the energy available, and that for this reason skill and experience should be employed by every municipality.

In contradistinction to the present statute labor system under which the roads of Canada are, for the major part, constructed and maintained, it is essential that there shall be a very radical change, and that responsibility and control shall be centralized and defined. This should rest, primarily, with the provincial governments, and a subdivision subsequently made between county and townships, the former controlling the main roads within its area. This control and subdivision of power can only be exercised by each party thereto bearing a share in the cost. The principle of state aid is one which, for this, as for other reasons, is essential, creating a means whereby the people of the cities and towns may assist in the work of country road building.

The principle that all citizens shall contribute to the cost of roads is already being carried into effect on this continent and exists in all European countries. There does not appear to be any reason why the farmer and rural population should pay the entire cost of road building any more than they should meet the entire cost of railway and canal construction. A system of good country roads is an expensive public work, in every way necessary for the development of the country, and, so long as the farmer bears the entire burden it is manifest that the desired end, good roads, will be difficult, if not impossible, to reach. In any event the attempt to do so comprises an injustice.

The towns are asking for good country roads. They are beginning to realize how important for them it is to have free and uninterrupted communication with the surrounding country districts at all seasons of the year, and would no doubt be willing to pay a fair proportion of the cost, in order that road improvement would progress more rapidly. This very interest which is being displayed is the strongest evidence as to the mutual right of townsman and farmer to pay for the construction of a country road system.

In Massachusetts, on petition of a county, the Road Commission may, with the assent of the Legislature, adopt any road within a county as a State highway. Except that the grading and bridging are done by the county, the work thereafter, both the construction and maintenance, is under the authority of the State Commission. Also, on petition of two or more cities and towns, a road between

them may be made a State gateway. The State Commission is composed of three commissioners, who compile statistics, make investigations, advise regarding road matters. One-fourth of the cost of construction is paid by the county, the remaining three-fourths being paid by the State. In 1894 the State spent $300,000 in this way; in 1895, $400,000, and in 1896, $600,000. It is intended that ultimately about one-tenth of the entire road mileage will be built as State highways.

In Michigan, upon a majority vote of the rate payers in any county, a county system may be adopted. A board of commissioners, five in number, are elected by the people, to lay out and construct certain of the leading roads, to be paid for and thereafter maintained by a county rate.

Last year (1898) an act was passed by the New York State Legislature providing that, on the petition of a county council, certain roads may be adopted as State boards. The petition is first presented to the State engineer. If he approves of the section of road thus sought to be improved he prepares plans, specifications and estimates. These are presented to the Legislature, and, if approved by that body, 50 per cent. of the cost of construction is paid by the State.

The New Jersey highway law provides that, on the petition of the owners of two-thirds of the land bordering on any road, the State Commissioner of Public Roads will cause the road to be improved in accordance with plans and specifications prepared by him, subject to the approval of the Legislature. The owners of the land affected by the improvements pay one-tenth of the cost, the county pays six-tenths and the State three-tenths.

Connecticut has introduced a plan of highway improvement providing for the appointment of three State Commissioners. When a township votes in favor of constructing a road, under the provisions of the State Highway Act, specifications are prepared and submitted to the State Commissioners. If the commission approves, the Township Council lets contracts for the work, to be performed under the supervision of the State Commissioners. One-third of the cost is paid by the State, one-third by the county and one-third by the township. The expenditure by the State in this way is limited to $75,000 annually.

The State of Rhode Island has appointed a commissioner of highways. When a council represents to the commissioner the need for improving a certain road, an examination is made by him.

If he considers the work necessary, he prepares plans, specifications and estimates and reports to the municipalities affected; also to the State Legislature, as to the proportion in which the expense should be met by the State and the municipalities benefited. If the State Legislature approves, the work is performed by contract.

Vermont and California also contribute largely in the form of State aid, while Indiana, Kentucky and others contribute to a less degree. In all these systems safeguards are placed to prevent the expenditure exceeding for any State or locality certain reasonable limits, according to the requirements and ability to meet the payments. In most of the States the tax is so levied that the towns and cities pay the greater portion of the cost of State road construction; for example, in the State of New York it is estimated that the people outside the towns and cities pay only 10 per cent. of the cost.

In England the main roads are under the control of the County Council and are managed by the county engineer. The maintenance of the roads of lesser importance rests with the district councils. A central authority, the Local Government Board, is entrusted with a general superintendence for the benefit of the nation at large. For a number of years a grant was made from the imperial exchequer toward main highways, but since the roads have passed the stage of a first thorough construction, this has been discontinued, it having been found that the counties since that time have been fully able to meet the necessary expense.

French roads are national, departmental and communal; corresponding largely to State, county and township roads. The national roads radiate from Paris, extending to all the important cities and departments, and are under a special engineering department (Department of Bridges and Roads) attached to the National Government. The second and third classes, departmental and provincial roads, are, in a general way, under local authorities, but departmental roads are usually entrusted to the care of the National Corps of Engineers.

Germany has a magnificent system of turnpikes, built and maintained by the National Government. They are under the general management of a State road commissioner, while he is assisted by an extensive staff of road directors and inspectors. Other roads are known as "country roads," and are built and maintained by the several parishes through which they pass.

The highways of Austria are classified as State or imperial

roads, provincial roads, district roads and community roads, according to the authority constructing and managing them. The cost of building and maintaining the imperial roads is derived from the national funds, the cost of provincial roads from provincial funds, district roads from district funds. The cost of community roads is borne by the several communities interested, aided in certain cases from the district funds. For the imperial and provincial roads the best of engineering skill is employed, while, for immediate repairs, road keepers are at work constantly.

Italian roads are under the supervision of the Minister of Public Works and are national, provincial, communal or vicinal, according to the source from which taxes for construction and maintenance are derived.

The more important roads of Denmark are controlled by the county councils, but are subject to the annual inspection of a State engineer. The roads of lesser importance are governed by the parish or township councils.

The main roads of Belgium, those routes running from one part of the kingdom to another, are controlled and managed by the State; another class, provincial roads, are controlled by the province; a third class, communal roads, are controlled by the communal authorities. The construction of these roads is entrusted to a corps of engineers.

In the Netherlands a network of roads, providing convenient travel from one part of the country to another, is maintained by the General Government; other roads are at the expense of the various provinces and communities benefited.

The Federal Government of Switzerland controls a few of the important roads, but in the main they are built and maintained by the Cantonial Government through whose territory they pass. The construction and repair of roads of lesser importance pertain to the several townships through which they pass.

Spain, decayed and tottering, the vestiges of an ancient magnificence falling from her, has not joined the good roads movement; nor has Turkey, the home of barbarism. Russia, too, has been exceedingly backward in road building, and as a result her extensive and rich dominions are still practically undeveloped.

These instances of progressive road legislation indicate that the Provinces of Canada are very inadequately equipped with the means of building and maintaining roads in a manner suited to their importance as a public work. Until the relation of the civil

engineer to road control is drawn much closer there can be little prospect of improvement. This can only be accomplished by inaugurating proper systems of control in which the importance of roads is more fully recognized by government and citizen. Undoubtedly popular feeling is approaching such an end in many parts of the Dominion. The Premier of Ontario has expressed the willingness of the Government to appropriate $1,000,000, under a system of State aid, but the details of the plan under which this appropriation will be made have not been completed. The general outline is expected to be a central advisory bureau, coupled with the county system, thereby providing for the improvement of main roads under competent engineering supervision. What may be expected from other provinces in the future can only be inferred from the fact that in every one, from Nova Scotia of the east, to British Columbia of the west, there are prominent and public-spirited citizens active in urging measures of road reform, a movement in which the civil engineers of the Dominion should be most capable of taking a part.

TAR-MACADAM PAVEMENT IN ONTARIO.

Mr. JAS. M. SHEPARD, U. S. Consul at Hamilton, reports (Aug. 3, 1900) that: After years of experiment, this city is laying a pavement that for excellence, durability and cheapness is commended for examination to those in charge of similar work in the United States.

The possibility of making good roads at reasonable cost has been demonstrated, and tests extending over a number of years on business streets prove that tarred macadam makes not only a smooth and solid roadway, but one that can be kept in perfect repair at nominal expense.

The first cost in this city, where limestone is abundant and near at hand, is from 70 to 86 cents per square yard; and the engineer estimates the cost of repairing on heavy-traffic streets at less than 1 cent per yard per year, while asphalt costs over 3 cents.

The addition of tar renders the roadway impervious to water, frost proof in winter, and prevents mud and dust in summer. It is easily repaired and does not require scraping, thus avoiding much wearing of the surface.

One block of tar-macadam laid more than a year ago on a busi-

ness street where there is heavy teaming shows no perceptible wear to-day. In residential streets, these pavements have been in use eight years without any repairs and are still in good condition.

The success of this method of road making depends on care in its execution—as in the case of all composite work of this character—and I submit for the information of those interested the substance of an interview with the engineer of public works, Mr. E. G. Barrow, covering details of the processes in use here.

Either stone or cement curbing should be placed before beginning the roadway. Cement costs here 50 cents per linear foot and is 6 inches thick, 20 inches in depth, and laid on broken stone or gravel. Corners are rounded and an iron plate imbedded for protection. On business streets, stone is preferable.

An essential in road making is a hard and compact foundation, which can be secured only by the liberal use of heavy rollers (12 to 16 tons) while the base is being prepared.

The grade and camber should be so designed as to carry water off the surface quickly, and all earth above the subgrade should be removed so as to conform to its level—12 inches below the natural surface—which subgrade should be thoroughly rolled and soft spots filled with stone.

The foundation must be compact, a solid bed of stone not less than 6 inches in thickness. If the soil is of a spongy nature, large, flat stones are preferred. All interstices should be filled with small stone and gravel, well rolled in. Over this a coating of gravel should be rolled hard and then a layer of tar-saturated stone, not exceeding 2 inches in diameter. These stones before being mixed with boiling tar (8 to 12 imperial gallons to the cubic yard) must be thoroughly dried, either in the summer sun or by exposure on heated plates, until all moisture is expelled.

After thorough rolling, another strata of tarred stone of the same dimensions and thickness is added, rolled and covered with a layer of gravel and quarry chips, also mixed with tar, 1 inch in thickness, to be rolled down from three-fourths to one-half an inch. A top dressing of screenings is then added, and if a light color is desired it may be obtained by adding cement.

Most of the stone used here is machine crushed, but during the winter season it is broken by hand labor and paid for per cord, to furnish employment in lieu of alms to the needy.

Limestone is used because it is abundant, but granite or flint stone would absorb less tar and stand more pressure and wear.

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

PHYSICAL BASIS OF MAN FOR TAXATION.

The prevailing mode of applying taxation to property is with little regard to its influence and effect on man and the growth of the family. It makes property and revenue everything and man and family absolutely nothing. Man is the molecule and atom of a community and is thus the unit in social science, and man and the family should be regarded each as a unit to be considered together in any scheme of taxation, which should be, like any applied science, based on conditions.

In ascertaining the needs and wants of a community we should first consider the physical conditions of the inhabitants, because physical demands are urgent and common to all. The sick and poor and the young and dependent are to be protected and cared for as part of the duties of a municipal government.

The principles of altruism and the dictates of humanity seem at once to say that the helpless must be protected and the young guided and instructed in aims for a higher life and for the best development of a social community. The individual—the unit in social science—is followed up and guided and restrained in all his connections with government, law and order and moral influence which may be and usually is largely the result of individual home training, and the feelings of the individual from his own judgment or choice guide him according to the circumstances by which he is surrounded.

The necessaries of common life may be divided into physical, moral and intellectual. Shelter, clothing and food are demanded by physical life. Moral and intellectual life are the results of surroundings culminating in education for the best development of social conditions.

In the early stages of life, up to about two years of age, the supply of the needs of an infant are for physical life and are necessarily about the same for the rich and those in common life. Care for the health and happiness of the infant can only be to the extent

*Continued from page 230.

of simple food and cleanliness and proper clothing and shelter which is demanded by Nature for the physical life of each and every infant alike, without regard to the means or source for the supply of them.

We have sanitary laws and regulations enforced by public law for the protection of life from its dawn until its termination, however short or long the period it may run. If these needs cannot be provided and properly attended to at the private expense and choice of individuals, public officials will attend to them in a manner at the expense of the public, and may, in proper cases, compel individuals to bear the expense and observe proper care.

In considering the needs and wants of a community for its proper development we must ascertain the probable physical status in conditions of the inhabitants. In cities like those in New York State in each ten thousand persons enumerated by a census there will be found about 247 under one year of age; 1,058 one year and under five; 1,221 five years and under ten; 1,107 ten years and under fifteen; 1,078 of fifteen years and under twenty.

It thus appears that there will be 3,623 of ten thousand under fifteen years of age who are largely dependent on others and need instruction. This is more than one-third of the whole number. Only one-half of the ten thousand will be over the age of nineteen —the other half will be under that age. One hundred and fifty-three will be seventy years of age and over. The sexes are usually about equally divided at the age of twenty.

Males predominate until about ten years of age, then females until about fifty years of age, then males up to sixty, then females.

As the age increases above nineteen years the number surviving at the same age decreases each year until all are dead. One-fifth of the whole are between twenty and thirty years of age. Nearly two-fifths of the whole are between the ages of twenty and fifty, and less than 10 per cent. are over fifty years of age. The science of life insurance is constructed on data of ages and mortality of adults. In order to be properly available as a science and financially safe the number included should be large. The larger the number of persons to whom it is applied the more exactly can it be calculated as to the probable expectancy of length of life at any age to require annual payments by the insured in such amounts that the science of mutual insurance can be administered on a safe and sure financial basis. The individual and his age is the unit for the basis of this science which gives protection and appeals to the feelings of all, and is thus voluntarily maintained by the nat-

ural altruistic feelings in man to provide for the helpless and dependent family in cases of emergency.

The social conditions and relations of the component parts of every community is an important element in legislation which must be considered with some degree of knowledge, and not left to mere guesswork. By resorting to the census we can learn that in every ten thousand inhabitants will be found about 3,600 of both sexes that are in the marriage relations, not including widows and widowers. The number of families as such will be about 2,100. The number of dwelling places will depend largely upon the class and occupation of the inhabitants and whether in a large or small city. The average number of children living in each family will be about two or more. More than one-fourth of the number of persons born die previous to the age of seven years, and more than one-half of the number of persons born die previous to the age of seventeen years. It must be true that the lack of proper provision for the necessaries of early life are the cause of much of this mortality.

The physical necessaries for consumption demanded in every stage and condition of human life can only consist of habitation, flour, meat, potatoes (fruit), water, fuel and clothing and can only be varied in kind and not in degree or quantity for health by any individual. Every person must have these in some form or substance, more or less. They are primary necessaries of life.

If the supply and use of these articles is more or less than is necessary and wholesome for the natural demands, it is harmful to the individual, and through him harmful to the community of which he is a member, and is a detriment to its development and growth and a hindrance to the other members of which it is composed.

Whatever has a tendency to make it difficult to obtain these demands in the struggle for existence must be a detriment to the happiness of the individuals so situated and by sympathy affect others. It cannot be possible to have a community that is completely satisfied—all the units in it. We can only suggest that the effort should be to make the best of it by providing ways and means for the greatest good to the greatest number as near as can be determined by observation and continuing in a systematic and scientific manner such laws and regulations as are necessary for that purpose in place of those that are found in conflict with such an end in view.

To do this most effectively is to consider the family and its com-

ponent parts. The physical and mental condition of its head is all important, he being the provider for the wants and needs of those who are dependent on him. The feelings of all the family must be reached through him by appeals to his head, heart and hands. The family contains the correlation and conservation of forces that make up a community from which springs true and ardent patriotism.

A provision by life insurance is voluntary, but taxes are inexorable and necessary and unmerciful, and if unjust and oppressive, they are cruel and destructive of the ends of government. To alleviate such effects is worthy of the closest and most careful study of the subject of taxation so as to make a science of its application. We should pursue scientific methods in investigating the subject of taxation and study its economic relations and ascertain how taxes can be disseminated and be appropriated for the greatest good to the greatest number of the inhabitants and for the further protection of the primary necessaries of life so as to render them less difficult to obtain.

While some laws would work well enough in sparsely populated localities and their harmonious use in an easy-going community of simple habits chiefly of one occupation, they would not be suitable when applied to all manners and conditions of people where their occupations are diverse and made intense by the struggle for existence and for supremacy and ambition, and where every conceivable form of gratification and happiness is in full activity and fruition, made keen by an era of luxury and extravagance and the contrast of poverty, want, indolence and intemperance as in any large city.

It is in cities that the demands for just and equitable taxation is most urgent, and where the problem of the science of taxation must be solved and applied. It is there where class taxation is in operation and where unjust discrimination is most apparent. A tax on moneyed capital or for business privileges would cause no complaint in agricultural districts, because it would have little or no effect; in commercial cities it would be quite another matter. In cities all conditions must be considered in such manner as not to be class taxation at the expense of another class of citizens.

This diversity of conditions and their extent in cities is now well enough known, and can be ascertained, to formulate a science of appropriate taxation founded on scientific methods that will be just as well as benevolent, and will give more general satisfaction than any method that has ever been tried among us. The tax

payers will be satisfied if the public get an equivalent for it as in many cases of local taxes.

It has always been a part of public policy to exempt or favor some classes of persons and property in taxation. Where this shall begin and where end is a great problem that still confronts us at the beginning of the 20th century. The subject is now receiving greater attention than ever before. Social science is now recognized as an applied science by legislation.

The family is everywhere, and is among all conditions of men. The needs of still more favorable legislation for its protection and growth can be given by laws in the direction of relief against unequal and unjust taxation in such form as to be for the advantage of a community. In relieving the family some of the burdens of taxation must be put upon other classes and on other conditions of persons and property. How shall it be? This is the problem before us.

The system that is new in embryo, in process of evolution, can be developed gradually into a science for a social purpose, that will enable governments to better effect due service to the cause of human happiness by recognizing and utilizing the laws that are implanted in man considered as they are affected by his relations to external objects, and thus aid to advance humanity in its own material and moral being. It can and should give more ample scope to the personal, the domestic, and even the religious side of human nature, all within the exercise of reason and the claims of active duty.

(*To be continued.*)

NEW YORK TENEMENT HOUSE CONDITIONS AND SUGGESTED IMPROVEMENTS.

REPORT OF COMMISSION.

The Tenement House Commission appointed by Governor Roosevelt last year to examine the construction, healthfulness, safety, rentals and effect of tenement house life on the health, education and morals of the people who live in such abodes made a full report, February 25th, of the conditions as it has found them and submits a proposed new code of tenement house laws, with recommendations for other specific legislation looking to the betterment of the condition of the tenement dwellers.

The general report of the commission calls especial attention to the present dangers from immorality and disease in the tenements, and emphasizes the need of proper bathing facilities, air space and small parks in the densely crowded portions of the city. Notice is directed to the fact that many of the present difficulties are not due to lack of proper laws, but to the wholesale laxity in their enforcement. A separate tenement house department is recommended.

The most serious evils confronting the commission were, the report says, insufficiency of light and air, due to narrow courts and airshafts; undue height of houses, and to the occupation by the building or adjacent buildings of too great a proportion of the lot area; danger from fire, lack of separate water closet and washing facilities, overcrowding, foul cellars and courts and like evils, classed as bad housekeeping.

"Of the 3,437,202 inhabitants of New York City," says the commission, "2,372,079, or more than two-thirds, live in tenement houses, as these houses are defined by law. In Greater New York there are 82,652 of these buildings, of which 42,700 are located in Manhattan, 33,771 in the Borough of Brooklyn, 4,365 in the Borough of the Bronx, 1,398 in the Borough of Queens and 418 in the Borough of Richmond.

"With all the remedial legislation and regulation which has been put into operation since the enactment of the first tenement house law in 1867, the present type of tenement house—the six-story double-decker—occupying 75 per cent. of a twenty-five-foot lot, with four families on a floor, gives to its occupants less light and less ventilation, less fire protection and less comfortable surroundings than the average tenement of fifty years ago. It is known as the 'double-decker' or 'dumbbell' tenement, a type unknown to any other city in America or Europe."

Air Shafts Should Be Prohibited.

The report then considers some of the defects of present tenement house construction. It says:

"Practically all the witnesses who testified before the commission united in the opinion that the 'air shaft' was the most serious evil of the present tenement. We found it had been designated 'culture tube on a large scale.' The objections to it are that owing to its narrowness and height it cannot possibly afford light to the rooms, but only semi-darkness; owing to these same facts it is impossible for it to furnish fresh air to the rooms, but it simply be-

comes a stagnant well of foul air emptied from each one of the rooms opening upon it, sometimes numbering as many as sixty.

"The air shaft serves also as a conveyer of smells and noise. The Fire Department has protested for years against it as one of the most serious evils with which it has had to contend in fighting fires in the tenement house district. The commission therefore recommends that such narrow 'air shafts' be absolutely prohibited in all future tenement houses, and that proper courts, sufficiently large to secure adequate light and ventilation to all rooms, be required."

As to the size of these courts, the commission seeks to distinguish between courts entirely enclosed and those open in one direction or more. The report recommends that where such a court is between wings of the same building or between different buildings on the same lot, the width shall be twelve feet. For buildings over sixty feet in height it recommends that the court increase in width for each additional story. For inner courts a minimum width of twelve feet is laid down. Where enclosed by four walls the minimum dimension is fixed at twenty-four feet.

Regarding space at the rear, the commission recommends that this be increased from ten to twelve feet in depth for buildings sixty feet high. It suggests that the power to build upon 75 per cent. of the lot be restricted to 70 per cent. Compulsory fireproofing is not recommended on account of the burden it would put upon both owners and tenants. The height of non-fireproof tenements it limits to five stories, except in the case of a building having a width of forty feet or more. In such cases sixty-seven feet, or six stories, are allowed.

Concerning the law requiring a light to be kept burning on each floor that is not light from sunrise to 10 o'clock at night, the commission states that this statute has become a dead letter and that the Board of Health makes practically no attempt to enforce it. The commission seeks to substitute for this provision a law providing that wherever a tenement house hallway is now dark the wooden panels in the doors shall be removed and glass panels substituted, or if this is not done that a proper window be placed at the end of the hall leading to the outer air. It also recommends that a light shall be kept burning in the public hallways of all tenements upon the entrance floor and also upon the second floor above every night from sunset to sunrise, and that upon all other floors such a light shall be kept burning from sunset until 10 o'clock at night.

Present Laws Not Enforced.

The investigations of the commission showed that there are thousands of tenement houses without proper fire escapes, and that many are improperly constructed where present and are totally inadequate for the purposes intended. The provisions recommended covering this subject are to a very large extent copies of the present regulations of the Department of Buildings.

One of the most striking features of the report is the section relating to the non-enforcement of existing tenement house laws and the recommendation of the Tenement House Department with the system requiring certificates of inspections before tenement house property may be occupied. "Out of 333 tenement houses in course of construction inspected by the commission in the Borough of Manhattan," says the commission, "only fifteen were found in which there were no violations of law. In the other boroughs there was no such house found. At present the enforcement of the different laws in relation to tenements is divided among the Health, Building, Fire and Police departments. It is apparent that the enforcement of the tenement house laws being only a small part of the work of these four different departments must receive a comparatively small amount of attention. This system possesses other disadvantages equally great.

"The responsibility being divided, it is difficult to hold any particular person or department responsible for the enforcement of the law. This became very apparent to the commission at the public hearings, where testimony was given by the different city officials. The responsibility for very serious violations of the law was shifted from one official to another to such an extent as to elicit the statement from the Assistant Corporation Counsel that 'the shifting of official responsibility has become quite a science.' When we consider that the physical, moral and industrial welfare of a large part of the community is directly affected by this shifting of official responsibility the consequences become most serious.

"The commission is of opinion that the best solution of the present and future tenement house problem will come through the creation of a separate department charged with no duty except the supervision of the tenement houses, a department of such size as to adequately fulfill such functions."

A Bureau of Building Needed.

The commission recommends in one of the bills accompanying the report that the proposed department shall have at its head a

single commissioner, who shall have entire control of the department and be the sole individual to be held responsible for any violation of the tenement house laws. In such a department there should be bureaus, according to the views of the commission, charged with specific functions.

The duty of enforcing the laws relating to light and ventilation of new tenement houses should be placed, the commission says, in a department whose daily duties take its officers and employees into existing tenement houses, and who are thereby familiar with existing evils and qualified to pass intelligently on those important particulars in the planning of new tenements.

At present, says the report, the officials of the Building Department upon whom this duty devolves practically never go into a completed tenement house. The commission defines a tenement house as "any house occupied as the home or residence of three families or more living independently or doing their cooking upon the premises.

"The officials of the Building Department," continues the report, "have not the knowledge or experience necessary to fit them to pass upon the sanitary questions that arise in considering the light and ventilation of a new tenement house. The testimony of the Building Commissioners that the present laws are adequate, and that the present type of airshaft is entirely sufficient in size, notwithstanding the testimony of every witness who appeared before the commission that the airshaft was a most serious evil and of no benefit, indicates this conclusively.

"One of the most important bureaus in a tenement house department will be, therefore, a building bureau, which should be charged with the duty of examining the plans for all new tenement houses, and seeing that they conform to the laws in regard to light and ventilation. In the bill submitted by the commission it is provided that the owner of every tenement house, after submitting his plans to the Tenement House Commissioner, shall receive from the latter a certificate that the plans conform to the tenement house laws in regard to light and ventilation, if upon examination they are found to do so. Until such a certificate is filed with the Commissioner of Buildings the latter, it is provided, shall not grant a permit for the construction of the house.

"The commissioner has sought to develop this idea of granting certificates to a still greater degree and has provided that before a new tenement house may be occupied the Tenement House Com-

missioner shall cause an examination of the building to be made, to determine whether it complies with the tenement house laws; and that if the building does not so comply, it shall not be used or occupied as a tenement house until it is made to conform to the requirements of the statute.

"The law provides specific penalties of $50 for each violation of the building law, and a further penalty of $250 for every such violation which is not removed within ten days. The Assistant Corporation Counsel testified before the commission that, although about 11,000 violations of the building law had been filed in the boroughs of Manhattan and the Bronx, these penalties were collected in only four cases.

"The requirement, therefore, that no tenement house should be occupied for living purposes until a certificate for its completion in compliance with the law be issued, will not only enforce obedience to law in the simplest manner, but will do away with the present cumbersome system of threatening prosecution and the dragging on of long legal proceedings in civil actions."

Sanitary Supervision.

"The work of the new Tenement House Department will relate mainly to the sanitary supervision of existing tenements. This will, of course, necessitate the creation in such a department of a sanitary inspection bureau. To be effective, this bureau should be of a size sufficient to inspect every tenement house in the city at least once a month. The commission estimates there are about 1,200 blocks of tenements on the Island of Manhattan. It would be necessary, therefore, to have for the Island of Manhattan about 100 inspectors, and for the greater city about 190 inspectors. This does not mean 190 additional employees. The inspectors would only take the places of those now employed in other city departments for such inspection.

"In addition to these two bureaus, it is very desirable that there should be a bureau of records, which should keep the records of every tenement house in such a manner as would enable the commissioner to know at any time all the facts in reference to any one tenement house.

"The commission finds that there are a number of houses in the city which are permanently infected with tuberculosis, and that families moving into such houses without knowing these facts have become infected with this dread disease. Dr. Biggs, of the

Department of Health, shows in a special report on this subject, which forms part of the report, that in one block in one part of the city there are at least three tenement houses in which have occurred twenty-two cases of tuberculosis in each house within five years.

"As a result of the lack of light," says the commission, "we find that pulmonary tuberculosis has become practically epidemic in this city. The testimony taken before the Tenement House Commission at its public hearings, in which leading physicians and specialists upon this subject testified, shows that there are over 8,000 deaths a year in New York City due to this disease alone; and that there are at least 20,000 cases of well-developed and recognized pulmonary tuberculosis in the city, and, in addition, a large number of obscure or incipient cases.

"The commission recommends the enactment of more severe penalties against prostitution in tenement houses. Its proposed code subjects a tenement house, any part of which is used as a house of prostitution, to a penalty of $1,000, which is to be made a lien upon the premises. The fact that a tenement house is used for such purposes is made presumptive evidence that it is so occupied with the knowledge of the owner or lessee, with a proviso that such presumption may be rebutted by appropriate evidence."

In regard to baths, the commission says: "Ordinary commercial considerations are likely to settle this question in the near future. Out of 311 of the new tenement houses which were inspected in the Borough of Manhattan, 125 buildings, or 40 per cent. of all, had a private bath for each apartment, and in Brooklyn the percentage was even greater."

System of Interior Parks.

The commission concludes that the average net return on tenements, without any mortgage placed upon the property, is 5.81 per cent., and that when a mortgage is placed upon the property, for about 60 per cent. of its entire cost, that the average net profit on such property is 7.03 per cent. It does not advocate the exemption of tenement house property from taxation, naming among other reasons the objection that it would necessitate drawing a distinction between "tenements" and "flats."

The commission recommends that streets in tenement districts should be paved with asphalt, and that they should be well lighted and kept clean. More lavatories and public conveniences are recommended.

In reference to parks, the report states: "It has been suggested that a park in a crowded district could be obtained at comparatively small expense by taking only the interior of a block and permitting the erection of model tenements upon the two exterior strips abutting on the streets. By its adoption the city would be able to obtain needed small parks and recreation grounds at comparatively small expense, and new tenements could be constructed to accommodate, at remunerative rents, quite as many people as are now inadequately housed by old tenements on the old area."

The membership of the Tenement House Commission follows: Robert W. De Forest, chairman; Raymond F. Almirall, Hugh Bonner, Charles S. Brown, Paul D. Cravath, William A. Douglas, Otto M. Eidlitz, George B. Fowler, Williams Lansing, William J. O'Brien, James B. Reynolds, I. N. Phelps Stokes, Myles Tierney, Alfred T. White and Lawrence Veiller, secretary.

Governor Odell's message transmitting the report to the Legislature follows:

"*To the Legislature:*

"I herewith transmit to you the report of the Tenement House Commission, which was created under authority of Chapter 379 of the Laws of 1900. The subject which this commission has had under consideration, and to which it has devoted a great deal of time and painstaking labor, is one of the most important claiming your attention. More than two-thirds of the inhabitants of the city of New York now dwell in houses which have been defined by law as tenement houses. Frequent attempts have been made by the Legislature, as the result of investigations made by legislative commissions and by philanthropic organizations, to improve the conditions surrounding those residents of New York and the other large cities who are obliged to live in the congested centres of population. While legislation enacted as a result of such investigations has in some degree improved the conditions which they are aimed to remedy, yet the rapid increase in the number of those buildings renders the subject of more vital importance to-day than ever before.

"The commission has been actuated by the highest motives in undertaking this work, and has prosecuted its investigations with energy and intelligence. They have codified existing and proposed laws bearing on the subject, and recommend them as amend-

ments to the present charter of the city of New York. They also suggest an amendment to the general health law.

"Their investigation has shown that discretionary power, as it relates to the tenements, which is now lodged in the Police Board, Board of Health, the Fire Department and the Building Commission in the city of New York, leads to complications, friction and non-enforcement of the laws. The result has been the erection of buildings without proper regard to sanitary and hygienic conditions. In lieu of this divided authority, now lodged in the various municipal bodies, as enumerated above, the commission recommends the creation of a new department, to be known as the Tenement House Commission, to whom shall be submitted all plans for tenements and whose approval must be obtained before such buildings can be occupied after completion, still leaving to the Building Department of the city the inspection of the structural part of the work. They propose to go further by making of this department an inspection bureau, so that existing tenement houses may at all times be under their surveillance. To the proposed commission is to be given power to enforce the laws which they suggest. Of necessity the administration of such a department as recommended by the commission must be municipal, yet it would be of great importance to the State at large. The evils resulting from poor tenements, through lack of sufficient light, ill ventilation and bad sanitation, affect not only the city in which they are located, but all parts of the Commonwealth. Comfortable home life is the inspiration of good citizenship, and therefore in this the State at large is interested. The sociologic side of the question, the relation of comfortable and sanitary housing to good morals, is so apparent and so well understood that it hardly calls for discussion.

"I believe that the enactment and proper enforcement of the laws proposed will do more to eradicate vice and benefit the morals of communities where overcrowded and unhealthy conditions prevail than any other police law which can be framed. This report is commended to your careful consideration, with the hope and in the belief that it will receive at your hands the attention which its importance warrants. If the proposed recommendations, after careful scrutiny, shall meet with your approval, they should be speedily enacted into law. B. B. ODELL, Governor."

The report of the commission and the message of the Governor were referred to the Cities Committee and ordered printed. Like action was taken in the Assembly.

MEDICAL EXCERPT.

By T. P. Corbally, A. M., M. D.

Vomito Negro.—Professor Dieulafoy has pointed out, at the last meeting of the Académie de Médecine ("Gazette Hebdomadaire," February 17, 1901), a new complication of appendicitis which indicates an unfavorable prognosis; the danger is in the *vomito negro*. Some patients suffering with this disease are suddenly attacked with vomiting of blood while little general febrile conditions exist. This peculiar action is preceded by a trace of icterus and sallowness of the eyes and skin and the evident existence of urobiline, which is a constant sign of the infection. The hepatic cellules undergo changes from the infection of the blood and generally the urine contains albumen.

When the appendix is resected it does not present evidence of very profound lesions; often it is only congested. The appendix produces remotely ulcerations of the gastric mucous membranes in the region of the pylorus.

Hæmatemesis is sometimes sufficient of itself to cause the death of the patient, and it should be for the practitioner the indication for an immediate operation. Hæmatemesis of a similar kind often appears in cases of strangulated hernia. The hæmatemesis are also sometimes accompanied with urobilinuria and albuminuria. The experimental ligature on the intestine may produce in animals gastric ulcerations and even hæmatemesis.

The toxines produced in the appendix react from a distance on the liver, on the kidneys and on the gastric mucous membrane in which it causes alterations more or less profound, even true ulcers which appear to compromise the integrity of the arterial tunics.

Appendicitis is a source of danger not only to the chest, but the entire organism is altered by the effects of the toxine that this disease is the means of spreading throughout the general circulation. An appendicitis that is not properly treated may lead to fatal complications; some of general infection; some to purulent infection of the liver, to gangrene of the lungs, etc. It may also produce other toxines; urobilinuria; severe attacks of jaundice, albuminuria, oliguria, anuria, symptoms of meningitis, ulceration of the stomach, fatal hæmatemesis. Such are the results of protracted delay.

MILITARY HYGIENE.—A special school for the education of military surgeons was inaugurated in Vienna, Austria ("Rivista Internazionale d'Igiene Gennaio," 1901), on the 6th of October last, in the Palazzo dell' antica Accademia Giuseppina, under the title Scuola d' applicazione pei midici militari (Militärärztliche Aplikationsschule). The scope of this school is to give to aspirants for the position of military surgeons the necessary instruction, and to afford to medici militari who are already in the service an opportunity to perfect themselves in these studies. The course for aspirants for the title of medici militari will last for one year and embraces lectures, practical instruction and exercises in the same. The lectures will treat on military hygiene, military surgery, psychiatric forense, practical sanitation, the elements of military science and a practical method of keeping records, etc.

There are also practical exercises on sanitary service in the field, exercises in surgical diagnosis and in bandaging, diagnosis and therapeutics of internal diseases, of ophthalmology, laryngology, otology, etc. The students are also given courses on experimental research in questions of hygiene, bacteriology, etc. The professors will be selected from among specialists in the Ospedali di Guarizione and the Comitato di Sanita. The applicants for admission to the lectures must have obtained the degree of doctor and have spent six months in the service of the army.

MACRODACTYLITIS.—M. Boinet sent to the Académie de Médecine ("Gazette Hebdomadaire," February 17) some considerations on macrodactylitis. This disease is rarely hereditary, it is more frequently met with in men than in women, on the right hand than on the left, on the median and the index than on any of the other fingers. It is found as an isolated deformity in half the cases met with. Radiography shows the importance of the bone lesions, especially of the epiphysaries, and shows the part they take in the deviations and the curving habitually found in fingers attacked with macrodactylitis. Dissection has shown a marked hypertrophy of all the tissues of the fingers.

THE MILITARY STEP.—Dr. Colin, of the French army, has published ("La Salud," January, 1901) the results of his investigations regarding the effects which the regulation military step of the disciplined soldier produces on his health and on his constitution. The regularity of the military step causes an indefinite repetition of the shock affecting the bones and the brain which is much more prejudicial than that produced by an irregular walk.

Dr. Colin attributes to the regular and uniform repetition of this shock on the same parts of the body much of the pains and diseases peculiar to the soldier. During the march of a single day this shock is repeated 40,000 times, and the strongest men, who can walk a long distance without fatigue when using the ordinary step, yield to the tension caused by the military step after two or three days. Dr. Colin proposes that the heel of the military shoe be made of rubber. The French infantry have begun to adopt this kind of heel, and it seems to afford some relief to the soldiers. The Government still continues to experiment with the rubber heels.

ARTHRITISM IN INFANTS.—M. Comby has studied the marks that are observed in arthritic children ("Le Progrès Médical," February 2, 1901). These signs are numerous, cerebral excitement, convulsions, cephalalgic pains and migraines, etc.; in the respiratory organs spasmodic laryngitis, asthmatic laryngitis, true asthma, etc.; in the heart, palpitations, defect of rhythm, etc.; in the digestive organs, anorexia, dyspepsia, habitual constipation; in the genito-urinary organs, floating kidneys and the various diseases of the urine; in the skin, different kinds of eruptions, lichen, urticaria, erythema, etc.; in the joints, frequent pains of uremic origin.

M. Comby insists on the presence of paroxysmal cephalalgia, repeated vomiting and uricemic fever. This periodical vomiting is often taken for meningitis, and, notwithstanding the grave symptoms with which it is accompanied, is relieved quite promptly. Sometimes the vomitings disappear by giving place to other arthritic troubles, as migraine, gout, asthma, etc.

Uremic fever is quite rare and is sometimes taken for paludic fever.

The pathogenic conditions of these functional troubles is very obscure; the urinary formula has not been established. As to treatment, it is essentially hygienic, mild diuretics, baths, rectal injections, injections of serum, etc.

As a prophylaxis, life in the open air, little school confinement, gymnastics in the open air, nourishment especially of vegetables. Benefit has been obtained from time to time from the use of alkaline waters in small doses.

M. Guinon asked M. Comby what difference there was between arthritic cephalalgia and that arising from neurasthenia.

M. Comby remarked that the points of contact were very close between neurasthenia and arthritism.

REMOVAL OF THE PATELLA.—M. Berger presented to the Académie de Médecine a patient from whom he removed the patella for osteitis with excruciating pain. The suture of the ligaments gave a perfect functional action.

M. Labbé referred to cases of osteitis giving excessive pain. The expansion of the vastus internis contributes to the functional result. Their action is equally valuable in fractures when parts are separated.

RADIOGRAPHY AND THE BRAIN.—M. Tuffier ("Progrès Médical," January 26, 1901) reported to the Académie de Médecine two cases in which radiography showed the presence of foreign bodies within the brain.

In the first case the X-rays showed distinctly the presence of the foreign body within the orbit, from which it was withdrawn. In the second case the ball penetrated one side and lodged in the frontal lobe on the opposite side. With the aid of the X-ray it was located and removed.

M. Tuffier has had several cases of this kind. In one of them the patient said that he fired only one shot, but the X-ray showed clearly the presence of two objects which the operation proved to be the halves of one ball which had been shattered against the temporal bone.

M. Contremoulin has had twenty-eight cases in which the foreign body was located with the aid of radiography.

M. Michaux presented a case in which the apparatus of M. Contremoulin enabled him to discover the ball and extract it on the side opposite to that through which it entered.

LOCAL ANÆSTHESIA IN HÆMORRHOIDAL OPERATIONS AND ALL VARIETIES OF MINOR SURGICAL WORK.—Dr. O. W. Green, of Chicago ("Medical Times and Register," February, 1901), renders such operations painless without general anæsthesia. Firstly, by injecting every tumor in sight with "acestoria" until each tumor is not sensitive to the prick of the needle. He then uses the clamp method, and then, with a straight needle, puts in two or more stitches, as may be needed, back of clamp; removes clamp and cuts tumor with straight scissors through the white line made by the middle blade of the clamp. There will be no hæmorrhage if this

line is followed. The stitches are now tied. Each tumor is thus treated. Then, with hydrozone and hot water, one part of the former to five of the latter, syringe or spray the field of operation thoroughly. The object of using hydrozone is twofold: It is the safest and best germicide and hæmostatic we have yet used, and we have tried many. Not being a poison, and depending upon the oxygen it contains for its action, renders it safe under all circumstances, both externally and internally.

An ideal dressing is ordinary sterilized gauze moistened with glycozone. Glycozone is anhydrous glycerine saturated with ozone, a powerful germicide and promoter of healthy granulation.

FOR THE PREVENTION OF EDDYISM.

The latest phase of the "Bell Bill," as favorably reported by the Assembly Committee on Public Health, March 14th, forbidding the practicing of healing by "Christian Scientists" or other faith curists not regularly licensed physicians, amended so that it will not prohibit the practice of "Christian Science," provided no fee or consideration is accepted by the so-called healers, reads as follows:

"Any person shall be regarded as practicing medicine who shall for remuneration, charge, fee, gift, bonus or reward, directly or indirectly profess to heal, or who shall give treatment to any other person by the use of any means or method whatever, whether with or without the use of any medicine, drug, instrument or other appliance, for the relief or cure of any wound, fracture or bodily injury, infirmity, physical or mental, or other defects or diseases.

"This article is not to apply to any person giving treatment to another under the direction or upon the prescription of a physician, duly licensed by the laws of this State. Neither is it to prohibit the manufacture, sale or use of patent medicines where no diagnosis is made by the maker or seller, or of the giving temporary relief in an emergency by a registered pharmacist or any person, or the domestic administration of family remedies; or any person in charge of or employed in any gymnasium from giving suggestions or advice as to form or methods of exercise, or any optician engaged in adapting glasses to the sight, or any rights of chiropodists under existing laws, or the manufacture or construction of optical instruments."

Whatever may be the fate of this bill, the use of the word Christian to qualify Eddy quackery is such a desecration to a sacred

word that it should not be used in this connection. Moreover, no single fact is adducible from the practice of Eddyism to justify its use of the word science. Science is organized knowledge. Eddyism is organized fraud for imposition on the uninformed. As characterized by Bishop Fellows, of Chicago, their free use of pious phrases and sacred names does not prevent him from making fun of their follies in addition to denouncing their wickedness. He recently told those inclining toward Eddyism that if they are going to start a new religious system because they happen to have been healed at some time through the influence of a mental law as universal as gravitation, then the people who have been cured by patent medicines have just as good reason to establish medico-religious cults as they have. Thus, he suggests, there would then be "Christian" Liver Pillists, "Christian" Sarsaparillists and "Christian" Cholera Mixturists. The Philadelphia "Medical Journal" hints that the Bishop might easily lengthen this list by taking names from quack medicine advertisements in the religious press; but then, turning serious, it quotes with approval the statement of Professor Jastrow that there is nothing characteristically religious in the "Christian Science" doctrines. "This criticism," it says, "is a profound one, and should be a source of comfort to those alarmists who fear that 'Christian Science' will overrun the land. It means that this system is no more a religion than it is a science, and therefore that it is probably destined to an ephemeral existence. Persecution will help it for a while, but a wise and forceful administration of the laws against it will do much to exterminate it." But Eddyism is no mere folly which can safely be allowed to run its natural course; it is a public danger of far from inconsiderable consequence, and it can hardly be ignored by those whom it constantly threatens with loss of health or life.

OSTEOPATHY CONDEMNED FOR BASENESS.

A letter to Governor Odell from J. P. Arnold and H. Walters, of the Mechane-Newral-Theray School of Trenton, N. J., has aroused additional interest in Assemblyman Seymour's bill regulating and licensing the practice of osteopathy. The letter says that osteopathy is only a new way of perverting young women, and an easier way for malpractice. The letter was turned over to Assemblyman Henry, chairman of the Public Health Committee, and he regards the matter as of such seriousness that he is inclined to give another hearing on the bill and have Messrs. Arnold and Walters come to Albany to speak on the subject.

EDITOR'S TABLE.

SANITARIAN, APRIL, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

SANATORIUM FOR THE POOR OF NEW YORK.

Why Not in the Pine Woods of Long Island?

A movement is on foot to establish another institution for the benefit of the poor of New York City who have tuberculosis in its first and curable stage. It is supported by several influential physicians and other philanthropists and has in view the purchase of a property in the Shawangunk Mountains, near Liberty, in Sullivan County. The particular site urged is the Walnut Mountain House, of which Mr. Charles T. Coutant, of Kingston, who is one of the leaders in the proposition, has charge. Its advantages as described are that the house is 2,420 feet above sea level and is of modern design, commodious and well built for winter as well as summer use. It could be made into a model sanatorium at slight expense. And that the climatological advantages have been demonstrated by the success of the Loomis Sanatorium at Liberty; as also of the favorable results in the care of consumptives in the Adirondacks, while it is much more accessible than the Adirondack institution, by which a large amount of transportation charges would be saved. But, for all these advantages and more, why not select a site in the pine woods of Long Island?

There are estimated to be not less than 25,000 cases of incipient tuberculosis among the poorer classes in the city of New York who need such provision and for whom there should be the greatest degree of convenience and best conditions practicable consistent with public safety.

The success of the Loomis Sanatorium and successful treatment of tuberculosis in the Adirondacks have not been due to the elevation of those localities above sea level, but to outdoor exposure and hygienic management generally.

Indeed, from what has been learned in recent years, the prospect of recovery from tuberculosis depends upon conditions favorable to and exactions for outdoor exposure, healthful surroundings, appropriate food, thoroughly ventilated bedrooms in dwellings absolutely free from dangerous emanations common to defective house drainage. In short, in sanatoria so situated and constructed, with regard to climatic and local conditions, as to be entirely

disconnected from the source of both soil and house emanations dangerous to health.

For all these conditions and facilities the pine woods of Long Island, within two hours by rail of New York City, are eminently available.

The soil of pine woods is naturally well drained by the process of the growth and decay of the saplings and roots of the trees. And doubtless much of the salubrity of pine forests, which is proverbial, is due to this condition. All pine forests spring up at first in thickets, with tap-roots, penetrating from a few inches to a few feet in depth, depending upon the size of the sapling or tree, with numerous radials. In the thickets, as the saplings enlarge and become crowded for need of room to spread their branches, the weaklings are overcome and "survival of the fittest" only is manifest. As the least fit continuously die out all along in the process of growth, the decay of the tap-roots and numerous radials which have penetrated the subsoil in all directions results in the establishment of a system of soil drainage which may be studied to advantage by engineers and agriculturists whenever a well-drained and dry surface soil is sought.

The pine woods of Long Island comprise the conditions as above described in eminent degree. The climate is mild, the land comparatively cheap, pure water accessible and abundant. All conditions favorable to the purpose considered, the pine woods of Long Island comprise conditions incomparably superior to any other region in the State.

CHICAGO'S POLLUTING SEWAGE.

SPRINGFIELD, ILL., March 9, 1901.

To the Editor of THE SANITARIAN:

In re the Chicago River and the pollution of the Mississippi by the sewage of Chicago and other cities of the State of Illinois, as set forth in your editorial in this month's SANITARIAN under the caption "Polluted Streams Self-Purification," permit me to submit to you the following brief facts and an analogous deduction:

The State Board of Health of Illinois, in a series of experiments conducted during the years 1899 and 1900, has been unable to find, by either chemical or bacteriological analysis, any evidence of contamination in the waters of the Illinois River at its mouth, *i. e.*, at its junction with the Mississippi. This fact, and "facts are chiels that winna ding an' downa be disputed," ought to conclusively demonstrate that "polluted streams self-purification" is very prop-

erly "the special contention of the Chicago press and of the accomplished Health Commissioner of Chicago." Very respectfully,

JAMES A. EGAN,
Secretary Illinois State Board of Health.

The editorial to which Dr. Egan refers is alone, or would be if it had been written with his letter in hand, a complete answer to the evidence he adduces against its contention. Indeed it anticipates the evidence he adduces by reference to evidence of the same kind adduced by Dr. Letheby thirty-five years ago: inability to find by analysis any evidence of contamination in water that was known to have had sewage poured into it. Nevertheless, even then, there were sanitary observers who took account of the common prevalence of typhoid fever and other water-borne diseases among persons who drank such water as sufficient evidence of its contamination without regard to the negative evidence of analysts. And from that day to this such evidence—evidence accepted as overwhelming in hundreds of examples without the need of analysis—demonstrates the dangerous use of sewage-polluted water by its sickening and fatal results. Insomuch that Dr. Egan, or any other sanitarian familiar with the published records, can sort the cities and towns of the United States where sewage-polluted water is in use by the records of deaths from typhoid fever.

DRUNKENNESS AND HOW IT SHOULD BE TREATED.

National Temperance Society,
3 and 5 West 18th St., New York, March 1, 1901.

To the Editor of THE SANITARIAN: The Board of Managers of the National Temperance Society and Publication House, believing that the times call for an active and aggressive campaign of the Christian Temperance forces against the liquor traffic, at a meeting held on Thursday, February 21st, instructed the general secretary to send a circular letter containing the following series of questions to a number of representative temperance men and women, with the request for replies.

The board believes that from the replies received it will be possible to mature plans for an aggressive campaign of the united moral and Christian forces that will make the new century memorable in the entire overthrow of the liquor traffic.

The replies will be collated and classified and copies of the results sent to all papers printing this circular.

QUESTIONS.

1. Now that the "Canteen" citadel has been taken, what, in your judgment, should be the next point of attack? 2. Is a union of the temperance forces of the United States at this time desirable and practicable? 3. If so, on what basis and along what lines, in your opinion, could such a union be effected? 4. Would you advise holding in the near future a conference (not a convention) of representative temperance men and women as a means to that end? 5. If so, what place, in your judgment, would be the best and what time the most fitting?"

"JAMES B. DUNN, General Secretary."

ANSWERS.

During my nearly sixty years of professional life, four years of it as assistant surgeon in the navy, when flogging for getting drunk as well as for other vices was in vogue, and five years' subsequent naval service, after flogging was abolished; more than twenty years' hospital experience; attentive observation and diligent study of intemperance and of the diseases caused by it, and of the dangers to life which drunkenness involves, I have become thoroughly imbued with the conviction that drunkenness at the outset is a *vice, wilfully* incurred and indulged, for which the drunkard himself is responsible and for which he should be punished, and not excused—and by excuse encouraged, or at least upheld—by shifting his responsibility upon other persons, or to his inability to resist temptation.

Hence the drunkard himself has been my point of attack, but always with kindness coupled with severity, and with such success as to justify me in urging as *the* point of attack which should be made next and *all the time* by the National Temperance Society against drunkards. While I have no sympathy with or excuse for the keepers of saloons or others engaged in the liquor traffic, I consider them less guilty than their patrons upon whom they depend for support. United effort of the temperance forces comprehending this line of attack is, in my judgment, most desirable as a means of both overthrowing the liquor traffic and the redemption of drunkards.

Liquor traffic and drunkards *together* constitute the bulwark against which the aggressive forces should contend. To render the aggressive work practical, from this point of view, the drunkard should be considered and represented in his just relation to the liquor traffic and as a bane to society at large, and dealt with

accordingly. Getting drunk is a vice, wholly inexcusable; for, unfortunately for the state of society generally, no person of ordinary intelligence will deny his knowledge of the effects of intoxicating liquor without the necessity of putting it to test in his own person. Getting drunk, therefore, should be justly regarded as a deliberate act in the face of common sense. It is no more excusable than the stealing of a trinket or picking a pocket. Indeed it is easy to trace the parallel of the drunkard with the thief, but with advantage to the thief. They both begin gingerly: the one in self-culture by tippling and the other by sneak thievery. Both are alike cognizant of the risks they take; both practices lead to increasing propensities to greater crimes and to final "homes," the one in the inebriate asylum or luxurious retreat (if his relatives can afford it), and the other where both ought to be—in the penitentiary—if fairly treated.

Some persons contend that drunkenness is a disease *per se*—even primarily—and for that reason excusable. This far-reaching fallacy is an immense obstacle to the success of reformatory efforts. That drunkards are ever liable to incurable diseases as well as to diabolical crimes is unquestionably true. True it is also that no one can vouch for the conduct of one who is drunk, even for the first time. Who, indeed, that does not know that to be drunk is to be beyond the power of self-control? Indeed, to get drunk is to place one's self in the condition to debase his race, to commit arson or murder; or, if in such a place of trust, to wreck a train of cars or sink a ship. The crime of crimes is to get drunk!

Effects should not be mistaken for causes. *Disease of the will* is a primary, though but temporary, result of alcoholism, even in the first drunk; the will for the time being is impaired, if not powerless. But drunkenness is the cause of it, and not it of the drunk. If the drunk is frequently repeated, intemperance persisted in, the disease of the will is correspondingly progressive and becomes chronic, insomuch that the individual loses his power of restraint; becomes imbecile, epileptic, idiotic or insane, common results of intemperance with which all observers are more or less familiar.

Indeed, of all diseases, as well as crimes, which affect society drunkenness is the most causative and the most debasing. It should be made proportionally punishable and odious.

I am fully mindful that these suggestions may be painful to some readers on account of family ties or to those whose sensibilities have been taken advantage of by interested apologists. But to suppress the truth in this relation is to encourage the crime.

FILTHY BAKERIES AND GLAZED BREAD.

"The Tribune" published a letter from James B. Reynolds recently with reference to the hardship and strike of the bakers on the East Side that reveals a horror scarcely less disgraceful to the Health Department for its existence than the prevalence of vice in the same section of the city to the Department of Police.

There are, he says, about 140 bakeshops on the East Side, employing from five to thirty-five men apiece.

The sanitary conditions in these shops, which are usually in basements, are such that no one could eat the bread if he knew how it was made. The bread made in the East Side shops is usually baked in a large loaf and is smeared with egg to give the top of the loaf a certain gloss. The eggs used for this purpose are frequently such as would stagger an egging party. They are bought at from 25 to 50 cents a hundred, and some of the bakers have assured us that they were not infrequently positively rotten.

The rooms are constantly kept at a most unwholesome heat, in order to raise the bread, the workers toiling in trousers and flannel shirts. In no shop visited were there signs of recent whitewashing of the side walls, which, under the law, the factory inspector may require to be done once in three months. In one shop dingy whitewash was peeling off directly over the place where the bread was being made. In this shop the men were dirty and their clothing was dirty. There were no windows, except over the tables where the bread was being made. No waterclosets are provided as a rule, unless it is in a corner of the room used for the bakeshop, in which case the stench of the closet adds to the general bad odor of the place. Men frequently sleep in the bakeshops on the benches where the bread is rolled, or even on the bread itself.

The primary responsibility for the enforcement of the bakeshop law is with the factory inspector's office, but the condition described is such that if the Board of Health's inspectors were in the habit of visiting our tenement houses as frequently as they ought they would long ago have stopped this condition in the interests of the public welfare.

If half of these places could be permanently closed by the action of the factory inspector and the other half forced to maintain a higher standard of cleanliness and to observe the law in respect to the hours of labor, the present conditions, suicidal to so many of the workmen, would be vastly improved.

HOW TO CHOOSE A FISH.

A Fulton Market man gives this simple rule for fish buyers to follow if they would secure fish that is eatable and certainly free of the ptomaines of which so many fish lovers stand in dread: See that the flesh is so firm that it will not be dented on pressure by the fingers, that the eyes are full, the scales bright, the fins stiff, and the gills are of the brightest, neither pale nor a dark liver, color. Then, if there is no odor to the fish, it may be eaten not only with safety, but with relish—if your cook knows how to properly prepare and serve it.

OYSTERS IN EUROPE.—Vice-Consul-General Hanauer wrote from Frankfort, September 22, 1900:

The French naval department has an exhibit in the Paris Exposition giving a graphic view of the development of oyster cultivation in France. During 1879-1887, the yearly average production of French oysters amounted to 11,000,000 francs ($2,123,000), gradually increasing to 20,500,000 francs ($4,825,000) for the year 1898, when 15,500,000 French and 3,000,000 Portuguese oysters were sold along the French coasts. The bivalves are a great luxury in Europe, and so dear that only the wealthier classes can afford to eat them. In the city of Frankfort, small German or Dutch oysters in the shell cost from 60 to 72 cents (2½ to 3 marks) per dozen. Some resident Americans occasionally have a barrel of American oysters sent by their friends at home. The shipment of our oysters in cold storage would be practicable and afford profit.

SANITATION IN HAVANA.

The report of the Chief Sanitary Officer of Havana, on another page of this number, is fruitful in suggestion, not only with regard to the prospects of Havana, but of the Gulf coast cities and ports of the United States, whose authorities, in their habitual purblindness to home conditions, are ever wont to attribute their danger to exterior sources. Though it is too soon to shout for the departure of yellow fever from Havana until the soil is completely cleansed by drainage and more than one summer passed, no one with practical knowledge of the habitats of yellow fever can mistake the significance of the results of even partial work in overcoming the local conditions common to yellow fever wherever it exists. The lesson is patent.

Proclamations of quarantine against yellow fever from Havana and other external sources—placebos to false sentiment and cor-

dons of dangerous home conditions—have already been issued for the coming summer, while many of them persist in cultivating yellow fever conditions at home.

PSYCHO-PHYSICAL LABORATORY IN DEPARTMENT OF THE INTERIOR.

It is a gratifying sign of the times that, in recognition of the progress of psycho-physical knowledge, a project is on foot for the establishment of a psycho-physical laboratory in the Department of the Interior in relation with the Bureau of Education.

The laboratory is not in the least to be in competition with other psycho-physical laboratories in our country. Its purpose is to gather sociological, pathological or abnormal data, as found especially in *children* and in *criminal* pauper and defective classes and in hospitals. Besides these data it is desired to gather more special data with laboratory instruments of precision and to make such experiments or measurements as are generally considered of value not only by psycho-physicists and anthropologists, but by physiological and pathological specialists. While the field is necessarily a very large one, the purpose is to study in those parts of it which seem at the time to be productive of the most practical results. To gather a large number of such data concerning a large number of individuals, and to compute and tabulate and publish the results could not easily be undertaken by an individual or by a university because of the great expense necessarily involved.

It is also desirable that the results of similar work in this country and Europe be collected, compared and published from time to time.

The field for usefulness of such a laboratory is so great as to be eminently worthy of the support of all persons interested in the promotion of physiological and social science.

HOME SANITATION.

The presidents of clubs belonging to the Western New York Federation of Women's Clubs have received the following letter from Miss Martha Van Rensselaer, chairman department domestic science, Western New York Federation, and editor Women's Reading Course of Cornell University:

ITHACA, N. Y., February 18, 1901.

Dear Madam President:

As chairman of the department of home economics of the W. N. Y. Federation of Women's Clubs, I am interested to know what your club has done this year or is to do in that line. Possibly the nature of your programme does not admit of this study

or possibly you have taken it up as a mental relaxation. At any rate is it not a good topic for the consideration of Women's Clubs in connection with art, music, history or science? Notwithstanding the fascination of these subjects, the demands of home life are like Hamlet's ghost, they "will not down."

Cornell University, through its extension department, has in connection with the farmers' reading course, a reading course for women. It is intended to meet the conditions in a farmhouse. If you consider it practicable we will supply each member of your club with the lesson on "Saving Steps." Then we should like to have the members discuss the subject at a subsequent meeting. It will favor us greatly if they will write us, suggesting new ideas and criticising those already advanced in the lesson.

The second lesson, now in preparation, will be "Home Sanitation." If you have time to discuss this subject it will help us to hear what your club members deem the most important topics to be considered and to have them suggest how difficulties may be remedied. We shall make it a rural problem and not one connected with the sewerage and city supply of water. Among other topics discussed in this lesson will be: "Drainage," "Water Supply," "Care of Cellar, Closets and Backyard," "Dust Dangers" and "Disposal of Refuse."

You can materially aid us in making this a helpful and suggestive lesson. Then cannot your club interest other women on farms who are perhaps deprived of present advantages of home study and recreative work? Club life to be most effective reaches out to women who have not these advantages. If you send us names of farmers' wives you will aid us; if you personally interest them in "Saving Steps" and other home questions and lead them to an exchange of ideas you will aid all concerned; if you write us on these topics you will reach them through us. The course is free to the women of the State. In order, however, to make it of most value we want the women to talk to us and the department will try to help them.

Should your club take up this feature and members desire the lessons, please advise how many to send or furnish us with names and addresses and the lessons will be sent direct.

You will observe that I write you with a double interest. I wish to encourage the study of home economics in our federated clubs and I want to make the women's reading course of the university as helpful and far-reaching as possible. I, therefore, ask the clubs

of the federation to lend the first united effort for the furtherance of the work among the farmers' wives.

MARTHA VAN RENSSELAER.

DR. STORER'S GIFT TO BOSTON.

In a pamphlet recently published, containing the particulars of the dedication of the new building of the Boston Medical Library in January, the addresses are given in full of Dr. David W. Cheever, Dr. James N. Chadwick, Dr. William Osler, Dr. J. S. Billings, Dr. H. C. Wood, Dr. H. P. Walcott and Dr. S. Weir Mitchell, all men of eminence in their profession.

In the address by Dr. Chadwick, who is librarian of the Boston Medical Library, the following reference occurs as to a valuable gift presented by our former townsman, Dr. Horatio R. Storer, to the Boston Medical Library. Dr. Chadwick says: Within the past month we have received from Dr. Horatio R. Storer, of Newport, R. I., formerly of Boston, the gift of a most remarkable collection of medical medals numbering 2,300 pieces. Only two other collections exist in the world commensurate with this, that of Dr. Joseph Brettaur, of Trieste, and that belonging to the library of the Surgeon-General's office in Washington.

Of the six other great collections that have been formed during the past two centuries all have been scattered, except that of Rueppelli, which was bequeathed to the Sangenbergische Gesellschaft of Frankfort.

Considered either from its historic interest, its æsthetic merits or its pecuniary value, I consider the gift as the most noteworthy that this association has thus far received. It is to be known as the Storer Collection of Medical Medals, in memory of Dr. D. Humphreys Storer, the father of the donor, and it is to be in charge of a son of the donor, Dr. Malcolm Storer, an accomplished numismatist.

ANNUAL MEETING OF THE ASSOCIATION OF MEDICAL OFFICERS OF THE ARMY AND NAVY OF THE CONFEDERACY.

The annual meeting of this association will be held in Memphis, Tenn., in connection with the annual reunion of the United Confederate Veterans, May 28th, 30th, prox.

Any further information desired will be most cheerfully furnished by Drs. Malone or Elcan, of Memphis; or Dr. Deering J. Roberts, Secretary of the Association, of Nashville, Tenn.

A recent visit to Memphis elicited the fact that nothing will be

left undone to provide for the comfort, enjoyment and pleasure of the survivors of the late war between the States. Every man, woman and child in Memphis is fully enthused and thoroughly aroused, with a full determination that the occasion shall be both eventful and momentous to every one who may be so fortunate as to attend.

The doctors of Memphis will see that their end of the line is fully kept up; and with a uniform railroad rate of one cent per mile over all Southern and Southeastern roads the attendance should surely be a feature of the occasion.

A. L. ELCAN, M.D., Secretary,
Southern Express Building, Memphis, Tenn.
G. B. MALONE, M.D., Chairman,
281 Main St., Memphis, Tenn.

TO THE PHYSICIANS OF THE UNITED STATES.

The National Woman's Christian Temperance Union has been active for twenty-seven years in combating the evils of alcoholic liquor drinking. Among its most effective allies have been those physicians who do not prescribe alcoholic liquors, allowing alcohol a very limited sphere of usefulness, or none at all.

We are endeavoring to bring the teachings of such physicians to the people, and we believe that much good is being accomplished thereby. It is apparent, however, that if the evils of liquor drinking (ill-health, poverty, insanity and crime) are ever to be fully abated, the medical profession must take a more active part in this much desired reform. They, more than any others, can disabuse the public mind of the old-time errors concerning the use of or necessity for alcohol, either as a beverage or for medicinal purposes. It would seem to be the duty of those to whom the public looks for guidance in all things pertaining to health to continue to make the most careful investigations of the nature of alcohol and its effects upon the human system and to see to it that *their medical practice and teaching, as well as their personal example,* is upon the side of safety.

The New York School of Clinical Medicine, a post-graduate college for physicians, has just now opened a new department for the study of the constitutional effects of alcohol and other drugs.

An eminent Russian physician, in a paper read before the International Medical Congress, held in Moscow, August, 1897, said: "The struggle against alcoholism merits as much attention on the part of the medical profession as that against the various epi-

demics, and the success of the struggle is impossible without the active sympathies of the medical profession."

Realizing the truth of the foregoing statement, the National Woman's Christian Temperance Union, at the beginning of this new century, appeals to physicians to aid in the efforts being made to remove, as far as possible, all tendencies and temptations toward the formation of the drink habit. The medical profession can wield a powerful influence by bringing to the knowledge of the people the consensus of scientific opinion and practical observation on the disastrous results which follow the habitual and indiscriminate use of alcohol.

Particularly would we ask physicians to warn parents against the home prescription of alcohol and against the use of proprietary medicines containing alcohol or other narcotic drugs by showing them the danger and by teaching them a better way.

We respectfully ask that this appeal be published in all medical journals, and that it be brought before national, State and county medical societies for discussion.

With profound respect for your honorable profession, and with hope for your active co-operation in this work we are, sincerely yours,

LILLIAN M. N. STEVENS, Pres. N. W. C. T. U.
SUSANNA M. D. FRY, Cor. Sec. N. W. C. T. U.

MORTALITY AND MORBILITY REPORTS AND REVIEWS.

NEW YORK.—The bill abolishing the State Board of Health and substituting a single Commissioner of Health therefor, referred to in previous number, was passed, and signed by the governor, March 1st, and Dr. Daniel Lewis, who has been president of the board now legislated out of office, has been appointed State Commissioner of Health, his term of office to expire December 31, 1904. Upon him is conferred all the duties and powers of the pre-existing board.

The Secretary's Bulletin for January reports: Population, 7,268,000; total deaths, 12,521; deaths under five years, 2,557; percentage of deaths under five years to total deaths, 20.5; from zymotic diseases, 2,570; zymotic deaths per 1,000 from all causes, 84; from cerebro-spinal meningitis, 38; typhoid fever, 192; malarial diseases, 14; small-pox, 10; scarlet fever, 108; measles, 59; erysipelas, 33; whooping cough, 56; croup and diphtheria, 345; diarrhœal diseases, 196; acute respiratory diseases, 2,770; consumption, 1,326; puerperal diseases, 98; diseases of digestive

system (not diarrhœal), 629; diseases of urinary system, 877; circulatory system, 1,114; nervous system, 1,223; cancer, 440; violence, 544; old age, 648; unclassified, 1,804.

City of New York, 3,536,517: Total deaths, 6,688; death rate, 22.2; deaths under five years, 1,646; from cerebro-spinal meningitis, 13; typhoid fever, 62; malarial diseases, 9; small-pox, 10; scarlet fever, 78; measles, 9; erysipelas, 14; whooping cough, 19; croup and diphtheria, 236; diarrhœal diseases, 130; acute respiratory diseases, 1,569; consumption, 817; cancer, 216.

Borough of Manhattan, 1,873,562: Total deaths, 3,729; death rate, 20.6; deaths under five years, 919; from cerebro-spinal meningitis, 5; typhoid fever, 40; malarial diseases, 1; small-pox, 1; scarlet fever, 45; measles, 5; erysipelas, 8; whooping cough, 10; croup and diphtheria, 114; diarrhœal diseases, 88; acute respiratory diseases, 807; consumption, 415; cancer, 143.

Borough of the Bronx, 222,124: Total deaths, 433; death rate, 23.5; deaths under five years, 97; from cerebro-spinal meningitis, 6; typhoid fever, 1; malarial diseases, 2; small-pox, 8; scarlet fever, 10; measles, 2; erysipelas, 1; croup and diphtheria, 16; diarrhœal diseases, 2; acute respiratory diseases, 95; consumption, 114; cancer, 6.

Borough of Brooklyn, 1,209,064: Total deaths, 2,148; death rate, 20.8; deaths under five years, 556; from cerebro-spinal meningitis, 2; typhoid fever, 20; malarial diseases, 4; smallpox, 1; scarlet fever, 22; measles, 2; erysipelas, 4; whooping cough, 7; croup and diphtheria, 95; diarrhœal diseases, 40; acute respiratory diseases, 542; consumption, 242; cancer, 57.

Borough of Queens, 162,834: Total deaths, 260; death rate, 18.8; deaths under five years, 58; typhoid fever, 1; malarial diseases, 2; scarlet fever, 1; erysipelas, 1; whooping cough, 2; croup and diphtheria, 6; acute respiratory diseases, 89; consumption, 31; cancer, 4.

Borough of Richmond, 68,933: Total deaths, 118; death rate, 20.0; deaths under five years, 16; from croup and diphtheria, 5; acute respiratory diseases, 36; consumption, 15; cancer, 5.

Deaths attributed to grippe during the four weeks ending March 2d, in the Boroughs of Manhattan and Brooklyn, respectively, 102 and 58. Deaths from *small-pox*, 38. The disease is again reported to be on the wane, though there has been a considerable increase in the number of cases reported in the Borough of Brooklyn. All the cases discovered are sent to the small-pox hospital in Borough of Manhattan, from which the deaths are

reported, including cases from Brooklyn. Vaccination continues to be prosecuted with vigor. The total number vaccinated in all the boroughs, since the outbreak of small-pox, November 5th to February 28th, 208,764.

CHRONIC SPITTERS will hereafter be vigorously hunted down by specially appointed health inspectors, and a systematic effort made to exterminate them by the health officials, just as in the case of microbes, Croton water animalculæ and other pests which menace the public health. Owing to the numerous communications received relative to the habit of expectorating in public places, the Board of Health, at a recent meeting, adopted the following resolution:

Resolved, That the sanitary superintendent is hereby directed to enforce Section 194 of the sanitary code regulating the spitting on the floors of public buildings, in cars and ferryboats in the various boroughs of Greater New York on and after April 1, 1901.

For violation of this section of the code there is a punishment of $500 fine or imprisonment for one year, or both.

Dr. Roberts, Sanitary Superintendent, says the law will be rigorously enforced. He has thought of having uniformed inspectors at public buildings and in public conveyances to arrest all those who spit on the floor and take them before a magistrate for prompt prosecution.

Albany, 94,151: Total deaths, 188; death rate, 23.5; deaths under five years, 25; from typhoid fever, 2; scarlet fever, 2; croup and diphtheria, 8; acute respiratory diseases, 26; consumption, 20; cancer, 8.

Syracuse, 108,374: Total deaths, 146; death rate, 16.0; deaths under five years, 29; from cerebro-spinal meningitis, 2; typhoid fever, 3; croup and diphtheria, 3; acute respiratory diseases, 17; consumption, 17; cancer, 3.

Buffalo, 352,387: Total deaths, 581; death rate, 17.6; deaths under five years, 144; from cerebro-spinal meningitis, 2; typhoid fever, 11; scarlet fever, 6; erysipelas, 4; croup and diphtheria, 11; diarrhœal diseases, 15; acute respiratory diseases, 123; consumption, 46; cancer, 21.

Rochester, 162,608: Total deaths, 261; death rate, 18.8; deaths under five years, 65; from cerebro-spinal meningitis, 1; typhoid fever, 5; scarlet fever, 1; measles, 7; croup and diphtheria, 3; acute respiratory diseases, 53; consumption, 28; cancer, 17.

CALIFORNIA.—The Governor's Bill declaring the non-existence

of plague in the State, has passed the legislature. Meanwhile the report of the scientific committee is awaited with much concern by the governor and his supporters. The Sacramento "Bee" of March 6th, invites attention to the governor's having suppressed the reports of doctors whom he himself had employed when they dared to report the existence of plague. He had the report of Dr. Ryfkogel to the State Board of Health, declaring the existence of plague, locked up, although it is a public document and belongs to the people.

No recent official report from San Francisco.

Los Angeles, 102,479. Report for February: Deaths from all causes, 161—23 under five years. From specific infectious diseases, 26; tuberculosis, 12; phthisis, 25; bronchitis, 5. "There were 25 deaths from pulmonary consumption, divided as follows: Natives of Los Angeles, 0; natives of the Pacific Coast outside of Los Angeles, 2; from other parts, 23; of the 25 deaths 23 had lived here less than ten years."

COLORADO.—Denver "Post," February 28th, says: "We have out of a population of 133,859 just thirty-seven people suffering from more or less mild cases of small-pox, or one out of every 3,617 inhabitants. In other words, there are 133,822 residents of Denver who are not afflicted, and there is little apparent danger of their ever becoming so unless they should be scared into it by the health department." Board of Health report unaccountably delayed.

CONNECTICUT.—The State Board of Health Bulletin reports for January: Total deaths, 1,439, in 166 towns having an aggregate population of 906,650. The death rates were, for the large towns, 18.5; for the small towns, 20.4; and for the State, 19.0; deaths under five years, 202; from cerebro-spinal meningitis, 8; typhoid fever, 14; scarlet fever, 9; measles, 3; influenza, 132; whooping-cough, 5; erysipelas, 6; croup and diphtheria, 41; diarrhœal diseases, 13; acute respiratory diseases, 302; consumption, 153.

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports for four weeks ending March 2, 1901: Total deaths, 538; death rate, 25.0; deaths under five years, 127; from typhoid fever, 2; diphtheria and croup, 7; influenza, 54; acute respiratory diseases, 79; consumption, 79; cancer, 7.

FLORIDA.—At the annual meeting of the State Board of Health, in Jacksonville, February 24th, the State Health Officer, Dr.

J. Y. Porter, was unanimously re-elected for another term of four years. The board was in session all day, with attention chiefly to the State Health Officer's report, which will not be given to the press for publication until after it has been transmitted to the governor. The report covers the transactions of the board for the past year, and is an elaborate and voluminous document.

The report treats of maritime quarantine matters, interstate and domestic quarantine, general health conditions, the extended prevalence of smallpox over the country and its successful management in Florida; malaria, yellow fever and the mosquito theory, vital statistics and many other subjects of a kindred nature.

Resolutions were adopted memorializing the Legislature to pass a compulsory vaccination law.

Resolutions protesting against the absorption of Tortugas by the Navy Department, and the consequent discontinuance of that point as a national quarantine refuge station, were adopted.

The importance of these resolutions is emphasized by a communication (Key West "Interocean," February 15th) from Dr. R. D. Murray, U. S. M. Hospital Service, with reference to it. Dr. Murray is well known as a veteran in practical familiarity with the requisite conditions on the Gulf coast for the prevention of the introduction of yellow fever. He says of Dr. Porter's report on the subject:

"Dr. Porter deserves much credit for his outlook for the future, and I regret that he did not go further into details as to making Key West 'impregnable.' For instance, the money spent by the navy at Tortugas would have cleared this harbor of some wrecks and a butcher pen, finished the northwest channel jetties, erected coal sheds on Fleming Key, reclaimed land from the sea and put an impetus to the impregnability of Key West, which would have permitted the 'Times-Union' in its issue of February 8th to definitely mention this island and harbor as the properest place 'for a naval base on the Florida coast.'

"Dr. Porter's experience and wishes for the future of this town and our State should give pause to some chimerical thinkers. We have suffered with yellow fever and the Gulf coast has tales of horror to tell that put foreign wars in the light of junketing parties. A soldier shot in battle does not send unmixed grief home—there is an element of valor, duty done and glory in the case that tempers the heart agonies of the wife and mother, and in due time the father and children get proud. I know that this idea is a correct one. But a death from yellow fever is followed by nothing

but grief, sorrow and dread—and frequently causes changes of residence, breaking up homes, loss of property, practical expatriation and a Pandora box of things that ought to be, but must not be done.

"I have suffered much in consequence of the occurrence, here and there, of yellow fever, and beg no man's pardon for my desire to have the disease kept out of my country, and if possible abolished from the 'nomenclature of diseases.' My war experience was a holiday compared to my anti-pest duties and privations, and I know others who share my feelings in this matter.

"Dr. Porter has called attention to the most important—health—and left matter that can be mentioned in so far as the Gulf and its coast is concerned, and by that act has given great aid to the navy, and his article cannot be considered other than *pro bono publico*."

ILLINOIS.—Chicago, 1,698,575. Report for January: Total deaths, 2,240; death rate, 14.65; deaths under five years, 632; from cerebro-spinal meningitis, 2; typhoid fever, 26; croup and diphtheria, 56; scarlet fever, 1; measles, 6; smallpox, 2; influenza, 82; erysipelas, 9; acute lung diseases, 654; consumption, 215; cancer, 81.

Sanitary conditions in the public schools have been greatly improved and contagious diseases among pupils minimized since the school medical inspection has been established, according to official statistics compiled by Dr. J. R. Neely, of the Health Department, and verified by duplicate records of the compulsory education department. In a report of the general condition of health among children in the city Commissioner Reynolds attributed the decrease in scarlet fever, diphtheria and kindred diseases to the prompt detection and exclusion of contagious diseases in schools before contagion had an opportunity to spread among the pupils. The monthly reports of school medical inspection for January, 1900 and 1901, show the following comparison in exclusions for scarlet fever, diphtheria, measles, tonsillitis and mumps:

	1900.	1901.
Scarlet fever	165	32
Diphtheria	94	49
Measles	199	61
Tonsillitis	318	203
Mumps	164	110

INDIANA.—Abstract of mortality statistics for February, 1901: Total number of deaths reported for the month was 3,350; death rate, 17.3. For the corresponding month of last year the deaths numbered 2,732, a rate of 13.4. The deaths during the month, under one year of age, were 566; one to five, inclusive, 214; and sixty-five years and over, 951. The deaths from all forms of pulmonary tuberculosis were 411, as against 395 for February, 1900. The rate from these figures is 193.2 per 100,000. Typhoid fever caused 45 deaths, diphtheria 55, scarlet fever 23, measles 19, whooping-cough 27, pneumonia 608, diarrhœal diseases 8, cerebro-spinal meningitis 43, influenza 324, cancer 86, violence 96, smallpox 2. Pulmonary consumption, pneumonia and influenza account for 39 per cent. of all deaths. A curiosity in the death table is the fact that the deaths from whooping-cough were greater than from scarlet fever, the figures being respectively 27 and 23. Cancer seems to be slowly on the increase. Among the deaths from violence we have to report the lynching of a negro at Terre Haute. We note also there were 87 deaths due to violence in February, 1900, and this February the number is 96. The two deaths from smallpox occurred, one in Daviess and the other in Lawrence County.

Sanitary Sections.—The Northern Sanitary Section, having a population of 839,835 and numbering 31 counties, had 960 deaths, which is a rate of 14.8. Compared with the corresponding month last year, this is an increase of 2.4 and is 3.5 less than the average death rate for the State during the month. The Central Sanitary Section, 33 counties with 1,024,791 inhabitants, had 1,407, a rate of 17.8. This is .5 higher than the average rate for the State, and is 3.8 higher than for the corresponding month of last year. The Southern Sanitary Section, 28 counties, 651,836 inhabitants, had 983 deaths, which is a rate of 19.8, being 2.3 higher than the average for the State and 5.2 higher than the corresponding month last year.

The counties which in February had death rates above the average for the whole State were: Blackford, 18.8; De Kalb, 20.2; Howard, 19.1; Jay, 17.9; St. Joseph, 18.1; Brown, 28; Clinton, 20.; Henry, 19.6; Decatur, 21.9; Fayette, 22.1; Fountain, 20.; Johnson, 21.8; Marion, 18.5; Montgomery, 18.1; Owen, 27.4; Putnam, 25.4; Randolph, 19.; Rush, 19.3; Shelby, 17.6; Tippecanoe, 18.1; Union, 25.; Vermillion, 20.4; Wayne, 25.3; Clark, 26.9; Crawford, 26.; Daviess, 24.7; Dearborn, 21.6; Floyd, 18.9; Jackson, 20.; Jefferson, 23.8; Knox, 21.8; Martin, 23.8; Orange, 24.6;

Perry, 22.1; Pike, 21.5; Posey, 25.6; Ripley, 22.2; Sullivan, 20.4; Switzerland, 26.3; Vanderburgh, 18.6; Washington, 19.4. The county having the lowest death rate was Pulaski, the rate being 5.5.

Cities.—The cities of the State, showing a total population of 847,302, reported 1,200 deaths, a rate of 18.4, which is .3 higher than the average for the State. For the corresponding month last year the total number of deaths in cities was 1,073.

The number of deaths under one year of age in the cities was 207, which is 18.1 per cent. of the whole number of deaths. The number of deaths over sixty-five years of age was 276, which was 24.1 per cent. of the whole number of deaths.

Comparison of Cities and Country.—The country deaths numbered 2,150, which is a rate of 16.7, and this rate is 1.7 lower than the city rate. The city consumption rate was 224. per 100,000, that for the country 177.5. The city typhoid rate was 27.6 and the country 21. Diphtheria—City rate, 36.8; country, 24.1. Scarlet fever—City, 10.7; country, 12.4. Pneumonia—City, 256.2; country, 343.4. Influenza—City, 142.6; country, 179.9. Cancer —City, 62.9; country, 35. Violence—City, 64.4; country, 42.

Cities by Classes.—Cities, Class A, having over 50,000 population, reort 309 deaths, a death rate of 17.6; cities, Class B, having 25,000 to 50,000 population, report 174 deaths, a rate of 19.2; cities, Class C, having from 10,000 to 25,000 population, report 314 deaths, a rate of 18.6; cities, Class D, having from 5,000 to 10,000 population, report 212 deaths, which is a death rate of 17; cities, Class E, having a population under 5,000, report 191 deaths, which is a rate of 20.5.

IOWA.—Bulletin delayed. Davenport, 35,254. Report for January: Total deaths, 52; death rate, 13.33; deaths under five years, 6; from typhoid fever, 1; acute respiratory diseases, 9; consumption, 5; cancer, 5.

KANSAS.—The Secretary of the State Board of Health reports for February *smallpox* in 43 localities, with an aggregate of 1,335 cases and 10 deaths.

LOUISIANA.—New Orleans, 300,000—90,000 colored. Report for January: Total deaths, 657—252 colored; death rates, white, 23.14; colored, 33.60; total, 26.28; from cerebro-spinal meningitis, 3; typhoid fever, 6; malarial fever, 6; smallpox, 14; scar-

let fever, 16; croup and diphtheria, 7; influenza, 23; acute respiratory diseases, 102; consumption, 82; cancer, 17.

The State Board of Health has taken action with a view to the establishment of camps in the pine woods of the State for the treatment of persons suffering with tuberculosis.

MARYLAND.—Baltimore, 541,000. Report for January: Total deaths, 997; death rate, 22.11; deaths under five years, 283; from cerebro-spinal meningitis, 2; typhoid fever, 18; scarlet fever, 2; whooping-cough, 4; croup and diphtheria, 30; influenza, 24; acute respiratory diseases, 209; consumption, 118; cancer, 25.

MASSACHUSETTS.—Boston, 560,892: For the year 1900 the number of deaths was 11,678, an increase of 51 over 1899, and making the death rate for the year 20.82 per 1,000 inhabitants, as against 20.12 for the previous year. The causes are listed as follows: Consumption, 1,247; broncho-pneumonia, 640; heart disease, 614; pneumonia, 598; diphtheria and croup, 537; cerebral hæmorrhage and congestion, 489; cancer, 450; meningitis, 317; bronchitis, 304; acute nephritis, 283; influenza, 215; scarlatina, 170; typhoid fever, 143; Bright's disease, 142; fractures, 134; alcoholism, 109; pyæmia and septicæmia, 100; whooping-cough, 39; diarrhœa, 93; measles, 83; diabetes, 77; pleurisy, 76; suicide, 76; rheumatism, 69; erysipelas, 53; softening of the brain, 16; homicide, 15; dysentery, 6.

Consumption again leads in the total number of deaths from a single cause, but the deaths of children under five years present perhaps the most startling results. There were 3,752 deaths of children of five years and under, which was 32.14 per cent. of the total number of deaths reported to the Board of Health for the year.

A Lesson from New York.

Health Commissioner Edwin W. Pillsbury, of Boston, with his chief sanitary inspector, Dr. Jordan, and Dr. Alexander Burr, the chief veterinary surgeon of the Boston Health Department, visited New York recently to study the sanitary regulations of the city and their operation especially with reference to lodging houses and tenements. They were taken in charge by Dr. Feeny, chief sanitary inspector of the New York Department of Health, and conducted through the several sections, institutions, tenement and lodging houses representative of obtaining conditions. Mr. Pills-

bury, at the conclusion of his visit, said he thought the lodging houses in New York were well looked after from a sanitary point of view. The lodging houses, he said, were rapidly becoming a problem in Boston and he had acquired a lot of useful knowledge by his visit to this city. He thought that Boston was a cleaner city in almost every way, but that the Health Department here was doing excellent work. As to smallpox, he said that Boston had been very fortunate, as only one case had been found there in a year.

Hospital for Consumptives.

MAYOR'S OFFICE,
BOSTON, MASS., February 28, 1901.

To the Honorable the City Council:

Gentlemen: I lay before you a petition of eminent taxpayers who wish the community protected from tubercular patients that are a danger to the public health about as smallpox cases are. The request of the petitioners is reasonable. To grant their request looks like a safe investment. After careful investigation it appears best to transfer the Marcella-Street Home, not now occupied, from the Children's Institutions Department to the Board of Health and to allow about $40,000 for adapting the buildings to hospital purposes, and furnishing the same. It is proper to acknowledge the fact that this important subject has had good attention in the City Council, which is now requested and urged to render a great service to the health and prosperity of the city.

Respectfully, THOMAS N. HART, Mayor.

BOSTON, February 15, 1901.

To the Honorable the Mayor and the City Council of the City of Boston:

The undersigned citizens and taxpayers of this city respectfully represent that the Board of Health herein established has by a regulation issued May 1, 1900, included consumption, called in said regulation pulmonary and laryngeal tuberculosis, in the list of diseases requiring compulsory notification, and after the removal or death of the patient disinfection of the premises;

That such cases of consumption constantly and frequently occur in families of the poor living within the city limits in places where the danger of contagion or infection is always great, while no means of providing for their special care and treatment here ex-

ists, although the proper protection of the public health so requires;

Wherefore your petitioners pray that by establishing a hospital and appropriating money therefor, or by such other method as upon due consideration may seem best, this city provide for the special care and treatment of consumptive patients who by reason of their condition in life are unable to procure the same.

Fred'k I. Knight, M. D.; Edward O. Otis, M. D.; B. S. Ladd; Mary Morton Kehew; Agnes Vietor, M. D.; A. K. Stone, M. D., and very many others.

The subject was generously discussed by the council and progressed for favorable action.

MICHIGAN.—The Secretary of the State Board reports for February (four weeks ending March 2), compared with the preceding month, pneumonia, pleuritis, inflammation of kidney, scarlet fever, erysipelas and whooping-cough were more prevalent; and typhoid fever, inflammation of bowels, intermittent fever, diphtheria, smallpox and measles were less prevalent. Compared with the average for February in the ten years, 1891-1900, scarlet fever, typhoid fever and smallpox were more prevalent; and intermittent fever, diphtheria, remittent fever, measles and whooping cough were less than usually prevalent.

Reports from all sources show *cerebro-spinal meningitis* reported at 2 places less; *whooping-cough* at 3 places more; *measles* at 4 places less; *diphtheria* at 13 places less; *smallpox* at 7 places more; *typhoid fever* at 84 places less; *scarlet fever* at 24 places less, and *consumption* at 1 place less in the month of February, 1901, than in the preceding month.

The number of deaths reported to the Secretary of State was 3,145—28 less than for January, but an increase of the death rate from 15.7 to 17.1; and 472 more than in February, 1900. Deaths of infants under one year, 536; one to four years, 185; of persons over sixty-five years, 1,029. Important causes of death: Pulmonary tuberculosis, 165; other forms of tuberculosis, 19; typhoid fever, 43; diphtheria and croup, 47; scarlet fever, 34; measles, 5; whooping-cough, 13; pneumonia, 474; influenza, 378; cancer, 121; accidents and violence, 100. There was a marked decline in tuberculous diseases, typhoid fever, diphtheria and croup, and a very considerable increase in the number of deaths reported from influenza. Pneumonia also increased, but not to as large an extent.

There was one death reported from smallpox in the city of Saginaw.

Coldwater, 6,216. Report for the year 1900: Total deaths, 94; under five years, 12; death rate, 15.1. The scientific basis on which the sanitary administration of this city is conducted and the plans taken by the Health Officer to render it thoroughly comprehensible by the people are worthy of the widest possible dissemination. For example, with reference to the most important subjects, he holds up before them the cogent remark of Sir Robert Rawlinson: "The foundation of all sanitary science is scavenging; and if I were asked what is the most important feature in sanitary science, I would repeat, again, scavenging. Your sewers, your drains and water supply are all secondary considerations if scavenging is neglected." Again, quoting the remark of Williams, of Memphis, Tenn.: "It would be difficult to overestimate the disease-breeding, death-dealing power of even the kitchen waste in our cities if allowed to accumulate, decompose and pollute the air we breathe, the water we drink, the food we eat and even the soil that we live upon." It is just an iteration of observed and well-reasoned-upon facts to state that the air, earth and bacteria are Nature's means of effecting the metamorphosis of animal and vegetable matter. That destruction by fire does this quickly and not slowly is a kindergarten axiom to the veriest child in sanitation. This is accomplished by cremation."

And then he reminds them that "a steel furnace of sufficient capacity to effectually destroy all the garbage of the city would cost from $3,500 to $4,000 and would not necessarily be operated but three days in each week, and that this cremation can be effected in the heart of our cities in a perfectly sanitary manner without giving offense to any one."

MINNESOTA.—St. Paul, 165,000. Report for January: Total deaths, 171; death rate, 12.43; deaths under five years, 38; from typhoid fever, 4; scarlet fever, 2; croup and diphtheria, 3; acute respiratory diseases, 39; consumption, 25; cancer, 5.

MISSOURI.—St. Louis, 575,200. Report for January: Total deaths, 925; death rate, 19.29; deaths under five years, 189; from measles, 1; scarlet fever, 6; croup and diphtheria, 37; whooping-cough, 4; typhoid fever, 8; malarial fevers, 5; acute respiratory diseases, 176; consumption, 110; cancer, 34.

MONTANA.—A bill has been introduced in the Legislature to create a State board of health, to be composed of seven members, four of whom are to be appointed by the Governor, who is made an ex-officio member of the board as well as is the attorney-general. The seventh member is to be elected by the other members and is to act as secretary of the board and be its executive officer. Provision is made to empower the board to elect the secretary from its number and, if that is done, the Governor appoints another member to take his place. The secretary must be an experienced physician and he is the only salaried member of the board. His salary is fixed at $1,200 a year.

The appointive members hold office four years, provided that those appointed to the first board shall be appointed for two and four years. Two members are to be thereafter appointed every two years. These members draw $5 a day for the time they are attending meetings of the board and get their travelling expenses. The board is required to hold four meetings each year and such others as are necessary.

NEBRASKA.—Lincoln "State Journal," February 8th, reports smallpox increasingly prevalent in the State, and in Alliance, where it has been more prevalent than in any other place, the case of a physician who had neglected vaccination, who refused to recognize the disease as smallpox, and who in a way made light of the diagnosis of other physicians. He took the disease and died of it. His death brought the people there to a realization of the necessity of a strict quarantine. Dr. Towne thinks the Lincoln Health Department is doing all in its power to control and stamp out the disease.

NEW HAMPSHIRE.—A bill has passed the Legislature and been approved by the Governor authorizing the State Board of Health to establish and equip a laboratory with the proper and necessary apparatus, utensils and instruments for the chemical and bacteriological examination of water supplies, milk, food products, drugs, etc., and the investigation of cases and suspected cases of diphtheria, typhoid fever, tuberculosis, pneumonia, malaria, glanders and other infectious and contagious diseases. All investigations conducted in the said laboratory shall be free to the people of the State.

Keene (March 12) is suffering a severe epidemic of scarlet fever necessitating the closure of the schools "and saloons."

NEW JERSEY.—Hudson County (Jersey City and vicinity), 386,048. Report for January: Total deaths, 680; under five years, 182; annual death rate, 21.1; from zymotic diseases, 56; diphtheria 29, typhoid fever 8; phthisis, 89; bronchitis, 36; pneumonia, 121; grippe, 18.

Newark, 250,000. Report for four weeks ending March 2, 1901: Total deaths, 285; death rate, 20.03; deaths under five years, 103; from cerebro-spinal meningitis, 3; croup and diphtheria, 13; scarlet fever, 3; typhoid fever, 1; acute respiratory diseases, 64; consumption, 49; cancer, 12.

Paterson, 106,291. Report for January: Total deaths, 161; death rate, 18.13; deaths under five years, 51; from measles, 1; croup and diphtheria, 6; typhoid fever, 1; acute respiratory diseases, 41; consumption, 24; cancer, 5.

Orange has been disgraced by the destruction of a refuge hospital by a mob of unintelligent people, incapable of recognizing the necessity of isolating and taking care of persons with contagious diseases as the means, above all other, of protecting the community, as well as the care of the sick.

NEW MEXICO.—A bill has been introduced in the Legislature, now in session, to preserve the public health. The bill, if passed, will constitute county commissioners a board of health, and justices of the peace and city officials health officers, who have the power and are compelled to abate nuisances dangerous to health, to order filth cleaned from back yards and other places, to enforce a quarantine upon the petition of five citizens of any precinct and to authorize the free vaccination of persons not able to pay for it. The powers given the respective officers in these matters are sweeping, and heavy fines are provided for any dereliction of duty on their part or disobedience to their commands.

NORTH CAROLINA.—The State Board of Health Bulletin reports for the month of January from 23 towns, with an aggregate population of 121,724—46,310 colored: Total deaths, 192—96 colored; death rates, white, 15.3; colored, 24.9; total, 18.9; deaths under five years, 48; from typhoid fever, 4; whooping-cough, 1; measles, 1; pneumonia, 35; consumption, 20; diarrhœal diseases, 6.

OHIO.—Cleveland, 395,000. Report for January: Total deaths, 491; death rate, 15.45; deaths under five years, 128; from ty-

phoid fever, 15; influenza, 6; scarlet fever, 2; croup and diphtheria, 26; smallpox, 4; acute respiratory diseases, 113; consumption, 10; tuberculosis, 24; cancer, 15.

PENNSYLVANIA. — Philadelphia, 1,293,697. Report for four weeks ending March 2, 1901: Total deaths, 2,126; under five years, 634; from typhoid fever, 25; scarlet fever, 27; croup and diphtheria, 76; acute respiratory diseases, 418; consumption, 271; cancer, 44.

Pittsburg, 321,616. Report for four weeks ending February 23, 1901: Total deaths, 481; death rate, 18.9; deaths under five years, 156; from croup and diphtheria, 11; scarlet fever, 2; influenza, 23; typhoid fever, 29; acute respiratory diseases, 109; consumption, 30; cancer, 8.

Camps for Consumptives.—A movement is in progress for the establishment of free hospitals for poor consumptives on the various forest reservations of the State, particularly on the high land in Luzerne County, where the conditions are especially favorable.

SOUTH DAKOTA.—Beresford (February 26th) is "overrun with *smallpox*." Seventeen cases now in quarantine.

TEXAS.—The Medical Practice Act, recently passed, appointing a medical board of examiners and requiring certificates of competency of all persons privileged to practice medicine in the State, gives great satisfaction and adds strength to the effort to pass the bill to create a State board of health.

UTAH.—Salt Lake City: At the meeting of the State Board of Health, March 7th, a resolution was adopted to the effect that all people who fail to report new cases of smallpox to the local health officers and boards, and the latter in turn to the State board, would be prosecuted. The board was of the firm opinion that there were many cases of the disease throughout the State that never have been reported.

VERMONT.—At a meeting of the State Board of Health, February 19th, resolutions were adopted expressive of its high appreciation and sense of loss by the death of Dr. Jo H. Linsley, until recently director of the Laboratory of Hygiene of this board, as follows:

Resolved, That this board learns of Dr. Linsley's death with sincere sorrow, inasmuch as he had long been intimately associated in a personal and official way with its members. We furthermore desire to record the deep sense of the loss we have sustained, together with the people of the State, inasmuch as it was almost wholly due to his enthusiastic labors that the laboratory was first established and became an important addition to the sanitary equipment of the State; and

Resolved, That this board fully recognizes the high ability which Dr. Linsley brought to his work here, and the difficulty which confronts it in filling his place; and

Resolved, That in common with his professional brethren at large, we mourn the loss of a tireless worker in the interests of science; and

Resolved, That we respectfully tender his bereaved family our sincere sympathy in their irreparable loss, and furthermore

Resolved, That a copy of these resolutions be sent to Dr. Linsley's family, a copy furnished the press and that they be entered in the minutes of the board.

WASHINGTON.—Seattle, 90,000. Report for January: Total deaths, 80; death rate, 10.66; deaths under five years, 12; from diphtheria, 2; typhoid fever, 3; acute respiratory diseases, 9; consumption, 14; cancer, 1.

WISCONSIN.—Milwaukee, 295,000. Report for January: Total deaths, 391; death rate, 15.64; deaths under five years, 136; from typhoid fever, 3; scarlet fever, 4; measles, 5; diphtheria, 16; acute respiratory diseases, 65; consumption, 30; cancer, 19.

Ashland is reported (Milwaukee "Sentinel," March 11th) in the throes of an epidemic of *typhoid fever,* attributed to the sewage pollution of the waters of Chequamegon Bay, its source of water supply. The city's sewage empties within a short distance of the company's intake and filtration system, and it is this water that those people of Ashland drink who cannot afford to buy spring water.

HAVANA, Cuba.—Major and Surgeon W. C. Gorgas, U. S. A., Chief Sanitary Officer, reports for January, 1901: We have used for the first time the nosological table as adopted by the International Congress of Hygiene, which met at Paris last August.

The sanitary improvement heretofore noted continues during

this month. The number of deaths, 476, is the smallest that has occurred in any January in Havana in the last twelve years. Yellow fever has decreased from 62 to 24, and the deaths from this cause from 20 to 7. The number of deaths is kept up by the increase among the deaths from tuberculosis, which about balances the decrease in deaths from fevers. For February the number of deaths has been very much fewer than in any February of which we have any reliable record, the minimum being that of 1893, when we had 446 deaths, and the maximum that of 1898, when we had 1,602.

The rate per thousand—19.32—makes even a better showing. The last February of the Spanish rule, 1898, gave us a death rate of 82.32 per thousand. A death rate of 19.32 places Havana in the class of healthful cities of the world. According to the latest figures from the Marine-Hospital reports: Baltimore, with a population of 508,957, for the week ending January 26th had 225 deaths, a death rate of 22.99; Cincinnati, population 326,000, for the week ending January 26th had 142 deaths, death rate 22.65; Boston, population 560,892, for the week ending January 26th had 260 deaths, death rate 24.10; Jacksonville, population 33,000, for the week ending January 19th had 16 deaths, death rate 25.21; Newark, N. J., population 246,070, for the week ending January 19th had 107 deaths, death rate 22.61; New Orleans, population 287,000, for the week ending January 19th had 156 deaths, death rate 28.26; New York, population 3,437,202, for the week ending January 26th had 1,432 deaths, death rate 22.42; Washington, population 278,719, for the week ending January 19th had 141 deaths, death rate 26.60; Belfast, Ireland, for the week ending January 5th had 165 deaths, with a death rate of 23.90; and Mobile, population 38,469, for the week ending January 19th had 22 deaths, death rate 29.73.

Jacksonville, Mobile and New Orleans all have a higher death rate than Havana. At present they look upon Havana with suspicion, but taking cities in the yellow fever area, such as New Orleans, Mobile, Pensacola, Tampa, Key West and Havana, those in bad sanitary condition, as shown by their high death rate, would be more likely to become infected than a city such as Havana, which is in first-class condition, as shown by its low death rate. I think it probable that within a year or two Havana will have to take steps to protect itself from the above-mentioned cities.

During February of 1900 we had 17 new cases of yellow fever; in February of 1901 we had 8 new cases. As the number of non-

immunes was very much larger in February of this than in that of last year, the showing is very encouraging.

Besides disinfecting the houses with formaline and other disinfectants, we now screen the rooms occupied by a yellow fever patient as soon as his case is reported, and kill all the mosquitoes in the building with the fumes of pyrethrum powder, at the same time covering with kerosene oil all places where mosquitoes can breed about the building. We also kill the mosquitoes in all the adjoining buildings in the same way.

HONOLULU, March 5.—The joint committee of the Legislature has just returned from an investigation of the leper settlement on Molokai Island.

The members of the native Home Rule party announced to the lepers that within a few months they would be granted local government at the settlement.

They will elect a board of aldermen, mayor and all other officers necessary to conduct their small municipality. The general supervision of the settlement will be under the control of the Board of Health.

The Legislature proposes establishing an experimental station at a cost of $25,000, where a systematic study of the disease can be made.

Several supposed lepers were examined and found to be without the slightest evidence of the disease, and if they are able to pass a bacteriological examination they will be dismissed from the settlement as cured.

CITY OF MEXICO, 344,377. Bulletin for November, 1900: Total number of deaths, 1,609—602 under five years. Annual death rate, 16.3. The chief causes of death and therefrom: Typhus fever, 47; tuberculosis, 177; pneumonia, 126; diarrhœal diseases, 486; cirrhosis of the liver, 93; bronchitis, 78; heart diseases, 57; meningitis, 33; apoplexy, 28; broncho-pneumonia, 26.

BOOK REVIEWS.

FISCHER—INFANT FEEDING IN HEALTH AND DISEASE. A Modern Book on All Methods of Feeding. For Students, Practitioners and Nurses. By LOUIS FISCHER, M.D., Attending Physician to the Children's Service of the New York German Poli-

klinik; Bacteriologist to St. Mark's Hospital; Professor of Diseases of Children in the New York School of Clinical Medicine; Attending Physician to the Children's Department of the West Side German Dispensary; Fellow of the New York Academy of Medicine, etc. Containing 52 Illustrations, with 16 Charts and Tables, Mostly Original. 368 pages, 5¾x8 inches. Neatly Bound in Extra Cloth. Price, $1.50, net. Delivered. F. A. DAVIS COMPANY, 1914-16 Cherry st., Philadelphia, Pa.

A thoroughly practical book, deduced from large clinical experience and thoroughly comprehensive of medical literature on the subject. It deals with the subject *ab initio*—the anatomy and physiology of the infantile stomach, with illustrations, showing the conditions in health and disease; describes the natural secretions and ferments and their action in the process of digestion; constituents and variations of milk; breast-feeding and mixed feeding; wet-nursing and weaning; raw cows' milk and its constituents; cream and modified milk; water as an infant's beverage; bottle-feeding; home modifications—sterilizing, Pasteurizing and Tyndallizing milk; infant food, forced feeding; Nathan Straus' milk laboratories and other charities. In short, all the conditions of infant feeding and their differentiation, with lucid descriptions appropriately illustrated, intelligible to mothers and nurses, as well as to physicians, pre-eminently practical and useful to all.

PULMONARY CONSUMPTION, PNEUMONIA AND ALLIED DISEASES OF THE LUNGS: THEIR ETIOLOGY, PATHOLOGY AND TREATMENT, with a Chapter on Physical Diagnosis. By THOMAS I. MAYS, A.M., M.D., Professor of Diseases of the Chest in the Philadelphia Polyclinic; Visiting Physician to Rush Hospital for Consumption. 8vo, pp. 539. Illustrated. Price, $3.00. New York: E. B. TREAT & Co., 241-243 West 23d st.

The author of this book has been long known as a diligent student and clinical observer of the diseases of which it treats, and for being skeptical on the now universally accepted etiology of pulmonary consumption for some time after it had been demonstrated. But for this, the work before us is perhaps all the more interesting. For, though he accepts the tubercle bacillus as a causative factor of pulmonary consumption, he considers it secondary to other causes which act independent of it, which he very fully presents, and with which all students of the disease should be acquainted. He formulates the fundamental concepts of the work into the following propositions:

"1. That pulmonary phthisis in the large majority of cases is primarily a neurosis, and that the pulmonary disintegration is secondary;

"2. That any agent, influence or condition which undermines the integrity of the nervous system will engender pulmonary phthisis or some other form of pulmonary disorder;

"3. That the only remedies of value in the treatment of pulmonary phthisis are those which appeal to and act through the nervous system;

"4. That of special value in the treatment of pulmonary phthisis is the counter-irritant action of silver nitrate introduced hypodermically over the vagi in the neck; and

"5. That acute pneumonia and other forms of acute pulmonary disease are closely affiliated with disorder of the nervous system."

These propositions are urged with vehemence and liberally supported by citations from authorities who used to be better than they are now, but who are still weighty with regard to the conditions that predisposed to pulmonary phthisis with which all physicians should have knowledge; and no book, to our knowledge, so forcibly presents them as the one before us. It well deserves the attention of the medical profession; above all, the attention of those who are, perhaps, too exclusively devoting themselves to efforts for the prevention of pulmonary consumption by destroying or preventing the dissemination of tubercle bacilli, eliminated by the affected, lest they overlook the fruitful conditions of the organism brought about by other causes.

His treatment with injections of silver nitrate is fortified by some marvellous results: Promotes sleep, improves appetite and increases strength, diminishes night sweats and increases weight. Improvements are illustrated by charts. But no cures are adduced.

As for the rest—pneumonia and other acute affections of the lungs—to which less than one-fifth of the book is devoted, it consists in an elaboration of his fifth proposition, as quoted.

TRAVELLING PICTURES AND SCHOOLROOM DECORATION. Prepared by MYRTILLA AVERY, Director's Assistant. HOME EDUCATION DEPARTMENT, BULLETIN 32, TRAVELLING LIBRARY SERIES. Albany: UNIVERSITY OF THE STATE OF NEW YORK.

Introductory: "During the last ten years an increasing interest in beautifying and decorating school interiors has been manifest, and much has been accomplished in both the East and West. . . .

New York, however, is the first State to take up the subject of schoolroom decoration. During the last three years the university has had this work in charge, and has circulated among high schools, academies and libraries photographs of great paintings, architectural monuments and historical portraits. The travelling picture system was a natural outgrowth of the travelling libraries started in 1892."

This bulletin of 153 pages comprises 100 beautifully executed full-page engravings of celebrated mosques, churches and cathedrals, tombs, sculpture and paintings, with a brief history of the subject of each picture.

"The list is not intended necessarily to represent the best art, but rather to include 100 of the most satisfactory subjects for the decoration of high schools, taking into consideration not only artistic merit, reputation, historical and literary significance and education, but also extreme or peculiar views on religious and ethical questions. . . . It is part of the plan of education to present to the mind of the pupils the greatest that the world has produced in science and literature in a methodical and comprehensive manner."

STUDY CLUBS, EXTENSION BULLETIN NO. 29, ANNUAL REPORT 1898. A pamphlet of 100 pages; deals with the special needs of study clubs and registered study clubs, with detailed reports. To which is appended a list of syllabuses printed, bibliographies and reading lists.

THE PRINCIPLES OF MORALS. By DAVID HUME.—The Religion of Science Library Series, bi-monthly; yearly $1.50. Chicago: THE OPEN COURT PUBLISHING CO. "Reprinted from the edition 1777": An old book with features worthy of being kept alive for comparison with everlasting issues.

THE INSPECTION OF MEATS FOR ANIMAL PARASITES. Prepared under the direction of Dr. D. E. SALMON, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture. Washington: GOVERNMENT PRINT.

A pamphlet of 160 pages, with illustrations of all sorts of animal parasites, of interest to all sanitarians, not only as a contribution to practical knowledge of research, but because it also treats of the communicability of certain parasites from animals to man, and suggests the necessary methods of prevention and treatment therefor.

CONTEMPORARY LITERATURE.

THE AMERICAN TEMPERANCE MOVEMENT AND THE PROGRESS OF PROHIBITION.

Anybody who should deny that the conditions of American life half a century ago pointed inevitably to the total abstinence movement as both logical and necessary would fail to read correctly the history of civilization in the United States. We were certainly a whiskey-cursed race. In a period when our leading statesmen and professional men were frequently intoxicated in public, and when ministers of the gospel were at times incapacitated for their sacred offices through over-indulgence, alcoholism had become a national disease. The common pot-house, or drinking resort, had always in the history of our ancestors been to some extent associated with disorder and crime. When in this country the reaction against drunkenness had converted the great majority of moral and law-abiding people to habits of complete or approximate abstinence, the common drinking place naturally lost such decency as it had possessed in earlier times, and became the resort of the least worthy classes, especially in country communities. As a rule, it became the centre of evil talk and all evil influences. Almost all forms of public misconduct and of vicious and criminal practices could be traced more or less directly to the common drinking place.

It is not strange that there should have grown up so strong a feeling in the churches, and especially among women, against the public licensing of such a manifest centre of demoralization as the average saloon of the American village. Thus, from the widespread success of the temperance movement, tinged as it undoubtedly was with a certain degree of fanaticism that mistook the means for the end, it was natural that the complete and effective prohibition by law of the drinking saloon should seem to many people a vital necessity. This demand for legal action took various forms. The one that most generally enlisted the practical support of prohibitionists was that of amendment to the constitutions of the several States. Such amendments were brought to vote in a number of important States, where they failed of passage, but gained a great support nevertheless. In several other States, notably Kansas, Iowa and the Dakotas, the plan of complete and radical prohibition was successful, as it also was in Northern New England. In a number of more conservative States the plan of

local option was adopted, each community being allowed to decide for itself. In the South the county was made the unit of local option, while elsewhere in the country the township or the incorporated village or city was the unit. One State, South Carolina, acted upon the interesting new theory that much of the bad character of the liquor traffic could be removed by getting rid of the element of private profit and setting up a State monopoly.

In Iowa there has come about a gradual change in predominant public opinion, followed by a change in the law by virtue of which saloons generally exist in the larger towns, where it had always been extremely difficult to enforce prohibition. In the smaller towns and in the rural districts prohibition is fairly effective, and public opinion holds tenaciously to a position that has been established by abundant experience. Iowa, in short, has reversed the application of the local option principle. "No saloons," is the general rule; the community that wants them must take affirmative action to that effect. In various other States one finds saloons under high license in the towns and quite generally excluded from the rural districts by the working of the ordinary local option plan. Maine and Kansas are the most important of the States that keep up the full and unqualified legal prohibition of the ordinary drink traffic.

The New Kansas Crusade.

It is a very remarkable and sensational movement in Kansas that has called fresh attention to the working of the prohibition system in the largest State that now maintains it. The aggressive strength of all phases of the temperance movement in this country has been derived chiefly from women. The Woman's Christian Temperance Union led the original movement that gave Kansas its prohibitory laws. Lawmakers and politicians, as a rule, are lukewarm toward all radical manifestations of the temperance movement; but they also recognize the political power that determined women can exercise. Thus, in Kansas they have not had the courage to modify the prohibitory system, while on the other hand they have had neither the courage nor the zeal to enforce the laws. In this respect the situation has been growing worse rather than better for a number of years. Saloons have been running openly on conspicuous streets in many towns and cities. When plain provisions of the statutes become a farce through the connivance of those who are sworn to enforce the law it is not to be wondered at that legal processes should fall into contempt, and that an exasperated sense of justice should resort to violence in or-

der to arouse the community at large to a sense of its own danger and degradation. A leader in this violent reaction has appeared in the person of Mrs. Carrie Nation, of the town of Medicine Lodge, on the southern border of Kansas.

Mrs. Nation holds the view that since the saloon is illegal it is permissible for anybody to force his way into it, and not only to destroy the alcoholic liquors that may not legally be sold in Kansas, but also the furniture and fixtures; to break mirrors and window-panes, and to inflict the largest possible amount of damage upon everything pertaining directly or indirectly to the carrying on of the business. If the Kansas judges continue to hold Mrs. Nation and her Amazonian crusaders free from all punishment or harm in their work of destroying saloons with axes, it must of necessity follow that the courts will equally protect them when they resort to the more thorough method of applying the torch. In the eyes of the law, certainly, there can be no difference between burning a saloon to the ground and hacking it to pieces with axes. The people of Kansas have had time to consider Mrs. Nation's position carefully, and tens of thousands of them are indorsing it.

Logical Consequences.

It is well to remember that it has taken our race many centuries to get rid of the plan of having every man a law unto himself. Already this Kansas crusade has extended from saloons to drug stores suspected of selling liquor for other than medicinal purposes. Its spirit is so intense and uncompromising that we shall not be in the least surprised to hear of the smashing of private houses whose owners are suspected of having dispensed alcoholic beverages in the entertainment of their friends. This is by no means a fanciful suggestion. Mrs. Nation and her friends say that they intend to carry their saloon-smashing crusade, not only throughout the length and breadth of Kansas, but into all parts of the country, and especially into the city of New York, where, of course, as Mrs. Nation must know, the sale of liquors by persons duly licensed is as lawful as the sale of Bibles, although most New York saloon men violate the law in points of detail. Again, it is to be remarked that it would be useless to criticise these women, who are acting along what they believe to be the line of duty under a higher law even than that which exists in Kansas. But the members of the State Legislature at Topeka are not moved by these higher considerations. They are not of the stuff of which saints and martyrs are made; they are just ordinary, everyday politicians,

and as such the country will judge them. The men of Kansas should either make the law fit the facts or make the facts fit the law.—From the "Progress of the World," "American Monthly Review of Reviews" for March.

PROTESTANT FOREIGN MISSIONS IN THE NINETEENTH CENTURY.

The Rev. Dr. Judson Smith, Corresponding Secretary of the American Board of Commissioners for Foreign Missions, in the March number of the "North American Review," takes a retrospect of "Protestant Foreign Missions in the Nineteenth Century." Dr. Smith's statements are most interesting and represent the result of a vast amount of evangelizing work done during the past hundred years among the heathen in various parts of the world. At the beginning of the nineteenth century missionary enterprise was in its infancy. Carey had just begun his work at Serampore, in India, the emissaries of the London Missionary Society had just entered on their labors in Tahiti, and the Moravians were toiling in remote parts of the Eastern and Western Hemispheres. Dr. Smith thus describes the outcome of the work of a hundred years:

"For the few scores of missionaries at work in 1800, at the close of the century we have 13,607, with an army of 73,615 native helpers by their side, distributed in over five thousand central stations through all the unevangelized peoples of the earth. In this single fact we have the promise of final victory. In these fields are 10,993 organized churches, with a membership of 1,289,289 souls, increasing at the rate of 83,895 each year. The annual income of the major societies has reached the noble sum of $17,161,092, and the yearly gifts from native Christians aggregate $1,833,981. The educational work presents like noble proportions. There are 93 colleges on mission fields, with 35,414 students, of whom 2,275 are women; of theological and training schools 385 are reported, with 11,905 students. Boarding and high schools number 857 and 83,148 pupils; industrial and medical classes count 197 and enroll 6,998 pupils, while in common or day schools the pupils reach the number of 904,442. The grand total of those under instruction is 1,046,309, one-third of them girls. The Bible, entire or in portions, has been translated into 421 different languages or dialects; a work of incalculable labor and value, of itself alone sufficient to challenge for this great enterprise the profound respect of the civilized world. Add to this the products of mission presses—364,904,399 pages of Christian literature annually, and 297,435 copies of periodical literature—and the significance of this fact be-

comes majestic in proportions and influence. Besides all this, bear in mind the 355 hospitals and 753 dispensaries, with 2,579,650 patients treated every year, to every one of whom the gospel is preached, many hearing it for the first time; and the foreign missionary enterprise that includes all these varied agencies assumes the dimensions and character of the greatest single force for the uplifting and regeneration of the world which we know or of which we can conceive."

JAPAN'S NEED OF CHRIST.

"This ancient people," writes Bishop Potter of the Japanese, in the March "Century," "waking with a new life, becomes conscious that neither arms nor battleships, nor machinery, neither railways, factories, nor constitutional government, make a great state; because none of them, nor all of them put together, produce that essential righteousness which is the essential strength of nations as of men. Misconceiving what that is for which the supernatural stands in the Christian religion, the writer whom I have quoted fails to recognize that the supreme power of that religion lies in the fact that it furnishes precisely that for which, unknowingly, he asks: a 'teacher of extraordinary gifts' . . . to preach moral truths with a force and authority which belong to true genius—to do this, and infinitely more than this, by the spell of a divine Personality that touches and conquers the heart of man to-day even as it did when that spell first broke upon the moral consciousness of men two thousand years ago. For that, though as yet it but imperfectly discerns it, the new Japan is waiting. May the day be not long distant when from the lamps that Christian hands have lighted, and still more from the lives that Christian men and women have lived there, it shall see and own its coming Teacher, Saviour, King!"

A MASTER OF MANY TRADES.

Cleveland Moffett continues in "St. Nicholas" for March his series on "Careers of Danger and Daring," his third article being "The Balloonist." I never knew a man, he writes, who has been so many things (and been them all fairly well) as has Carl Myers, of Frankfort, New York. They call him "Professor" Myers ever since he took to ballooning, years ago; but they might call him Dr. Myers, for he has studied medicine, or Wrestler Myers, for he is skilled in all tricks of assault and defense, Japanese and others, or Banker Myers, for he spent years in financial dealings, or Printer

Myers, for he still sets up his own type, or Telegrapher Myers, or Lecturer Myers, or Carpenter Myers, or Photographer Myers.

All these callings (and some others) Myers has pursued with eagerness and success, only making a change when driven to it by his unquenchable thirst for knowledge and his guiding principle: "I refuse to let this world bore me." To-day the professor is sixty years old (a thin, wiry, sharp-eyed little man), yet I suspect some boys of sixteen who read these pages feel older than he does. You ought to hear him laugh! or tell about the air-ship that has carried him over thirteen States! or describe his "balloon farm" at Frankfort! I don't know when I have enjoyed myself more than during three days Professor Myers spent with me a little more than two months ago.

"ALL WORK AND NO PLAY MAKES A DULL BOY."

"The Physiological Need of Playgrounds" was the subject of a talk by Dr. George W. Fitz before the Civic League at the Twentieth Century club-rooms, in Boston, recently. He said, in part:

"The child has need of play. Its activities have no definite end in view, but are spontaneous, until they come to the technical nature of complex games, which are not generally classed as play. All play of a child is based upon an imitation of others, as it is in young animals. The game of tag is based on the chase of older persons, and other pastimes come from observation.

"The theory that play is caused by a superabundance of energy, forced out until fatigue sets a limit, is not wholly correct. Rather it is the stimulus of the play itself, for when a child is apparently too tired to drag along with its mother it will run off and enter with zest into play with its fellows.

"Movement brings joy to the child and trains for life, bringing out all the activities of the adult, by developing the bone, muscle, nerve force and the whole body.

"Until within 100 years the opportunities for the activities of childhood were complete, but now they are limited by the increase of city population, and we are faced by conditions of recent origin.

"The cheapest form of activity is play, for it requires only room, although at first the child who has had no early opportunity must be taught how. It is pitiable to see so many who do not know.

"We have too little experience with playgrounds to decide positively just how much influence they may exert for good, but we have had enough to know something of their influence on the early life."

THE SANITARIAN.

MAY, 1901.

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PREVENTIVE MEDICINE:

THE CITY OF HAVANA AS A NEW FIELD FOR ITS APPLICATION.*

By DR. ERASTUS WILSON.

The progress of medical science has ever been dependent upon our increased knowledge of the natural laws that determine a state of health or disease in a far greater degree than upon the experimental application of remedies.

The caves and gravel beds of Western Europe discover to us a human history running back through unnumbered millenniums of years, even to the quarternary geologic period, and strange, indeed, is it to say that, notwithstanding all of our boasted human intelligence, our capacities have been so obtuse and our tendencies so strong toward an indolent sinking into fortuitous habits of mere animal existence and indulgences that the laws that make for health or disease are but just dawning upon our infant understanding.

Even now the progress already made cannot be said to be so much a conquest of our astuteness, because it is clearly the result of the irrepressible and constant appeal to us for recognition by the immutable laws that govern the universe. We are at last awakening to their urgent appeals after all these centuries of incredible indifference and the senseless sacrifice of millions of precious human lives.

Man is by instinct a gregarious animal, and from his primitive wanderings and migrations he has been progressively drawing together into urban communities.

This approximation has taught us, by practical demonstration, much about the augmentation of productive power that is gained by associated efforts.

This instinctive centripetal force, ever acting upon human society, has been enormously accentuated during the last half century

*Read at the Third Pan-American Medical Congress, Havana, February 9, 1901.

by the precipitation and crystalization, so to speak, of our accumulated intelligence into mechanical forms of labor-saving machines for utilizing the imponderable forces of Nature as substitutes for animal forces employed in industrial pursuits.

This surprising fact has operated a radical and far-reaching industrial revolution that has brought the material interests of human society into direct antagonism with the conservative indolence or force of habitual inertia that is so strongly intrenched in the animal nature of humanity. The introduction of labor-saving machinery has demonstrated the superior productive power of intelligent ideas over that of brute force. It has taught us that a knowledge of Nature's laws has a commercial value; that it not alone cheapens production of articles, subjects of commercial exchanges, but also greatly improves their useful qualities, multiplies enormously their quantities and facilitates and cheapens their transportation and distribution, thus imparting greater stimulus to commercial intercourse.

The advent of manufacturing machinery led directly to the establishment of the factory system with associated capital, and these industrial corporations have, for economic reasons, naturally located in or near the centres of commercial distribution—the cities or larger towns—and to them the operatives have had to migrate. Thus our increasing insight into or knowledge in natural sciences and its application to industrial arts has greatly fortified the centripetal tendencies which are drawing human society more and more into urban agglomerations and rendering its individual members more and more dependent upon each other in universal brotherhood and correspondingly greater responsibility for our sanitary conditions.

Everywhere the urban population is rapidly increasing, while the rural is but very slowly, and in many parts is actually decreasing, because of migrations to the cities and towns. In England already 75 per cent. of its people live in cities and large towns.

Paris has quintupled its population during the nineteenth century, and Lyons and Marseilles have quadrupled theirs in the same space of time.

Berlin has tripled in twenty-five years, and in Belgium and Holland the statistics of the manufacturing towns show a similar wonderful growth.

Italy exhibits to us the same phenomena: Rome and Milan have doubled their population in the last quarter century. Genoa and Turin show a 70 per cent. increase in the same space of time.

In the United States we have witnessed the same surprising growth of cities and towns, while in many parts the rural population has remained stationary or actually has receded in numbers.

Thus the cities outgrew their housing capacities and even villages expanded into large manufacturing centres without any adequate sanitary appliances corresponding to these changed conditions. Tenements were overcrowded with human life from cellar to garret, often several families residing together in a single room.

Americans have felt a just pride in the rapid growth of their cities and towns, but have erroneously attributed it to their new country and its democratic institutions. This wonderful growth is not alone in American cities. The same concentration of population within urban limits has been going on all over Europe, where modern machinery has penetrated.

If it has been very marked in some American communities, it is because the wide range in that country of popular education has greatly increased the number of its inventors of labor-saving machines, thus making their employment more general there.

The general fact is the same everywhere, and is that the inevitable progress in the development of human intelligence is taking upon itself the character of a fellow worker with Nature. Its ideas, crystallizing into forms of labor-saving machines that harness the forces of Nature to its uses, have brought about a complete industrial revolution that is forcing upon us radical social reforms.

We are now existing under entirely new conditions, from which we cannot turn back. Our only course is to accept the inevitable and adapt ourselves to it and cope with the new problems of urban life.

At the time when mediæval cities were founded they were established as separate and independent communities. The vast network of railroads and telegraphs which now annihilate time and space, drawing the world into closer and dependent relations, did not then exist.

Their streets were a congeries of narrow, crooked, dark and untidy passageways, exhaling foul odors and dark miasma into unventilated habitations, and their rates of morbidity and mortality were consequently enormous.

The annual death rate in London prior to the great fire of 1666 was 80 per 1,000; and this is a fair sample of other cities of that time.

That of Papal Rome, even as late as 1870, when it was surrendered to United Italy, was about 35 per 1,000, and the great sani-

tary inspector—*Asiatic cholera*—found Naples, in 1884, even in a worse sanitary condition.

England led the way out of these untoward complications. Fire —combustion—Nature's great and universal disinfectant, took upon itself the sanitation of Old London, and accomplished its work in four days, consuming four-fifths of all that city's buildings.

That method of sanitation, although in that particular case quite accidental, taught a very valuable lesson to England and the rest of the world; but, notwithstanding this fact, it was not until the year 1838 that the subject was taken up seriously by the English Parliament appointing a "royal commission" to inquire into the conditions that were responsible for the high rate of morbility and mortality among the working classes of cities.

This commission, of which Mr. Edwin Chadwick—afterward Sir Edwin Chadwick—was the secretary, established the first bureau of vital statistics as the only scientific basis for sanitary inquiry, and to these bureaus we are chiefly indebted for the pointing of the way to all our modern triumphs in sanitation.

They have taught us that the laws of health require dry and clean habitations upon dry soil, built with damp courses in the foot of the walls above their foundations, that humidity may not reach the rooms by capillary attraction; that every habitation must be thoroughly ventilated by perflation, that the atmosphere of their interior and surroundings must be free from noxious miasms, from uncleanness, or, in other words, from decaying organic matter; that they should be adequately supplied with pure, potable water, and that all domestic excreta and slop-waters should be conveyed away from their vicinity before putrefactive fermentation commences within them; also all garbage from kitchen and elsewhere should be as promptly removed.

These maxims constitute the modern sanitary code. All else is commentary.

Although practical sanitation is still far behind our knowledge of the science, yet progress has been made in its application, and the aforesaid maxims mark the ideal excellence for which we are to strive.

With this ideal as our guiding star, what are the practicable sanitary works necessary and possible in order to reform the unsanitary conditions of the city of Havana, so as to approximate the modern sanitary ideal to the extent of making it a safe port for

commercial relations, also for permanent immigrants and for summer tourists?

The first fact that springs up before us on such an inquiry is, that the city has no excretory organs and is consequently in similar danger as that which an individual person would be in if filled with accumulated sewage and with no outlet for relief, the water consumed dissolving it and facilitating its filtration into all the tissues of the body, as it is into all the soil of our city.

The groundwork of Havana is honeycombed by privy vaults and cesspools that have, to some extent, been connected with gutters under the surface of the streets, here called sewers, thus facilitating the widespread filtration of their putrid contents into the soil.

Consequently, sewerage works are of first and immediate necessity, together with works for the drainage of the ground and storm waters that should be executed at the same time.

Thus, our soil resting upon a clayey subsoil, is humid and always filled with dissolved or suspended and decomposing organic matter, but would, if properly drained, admit the penetration of the atmosphere which gradually would purify it by oxidation and nitrification of these impurities, after which an impermeable pavement and proper sanitary inspection would protect it from further corruption and would consequently be the next sanitary work both in importance and sequence.

For domestic uses we have an abundant supply of spring water of good quality, but it is wasted to such an extent by leaving taps open at all hours that the pressure in the distribution pipes is so reduced that upper floors are deprived of it.

Moreover, this excessive use, without proper drainage, keeps our soil in a saturated and unhealthful state, favoring the putrefactive fermentation of the organic material in the soil which fills the atmosphere with miasms, the constant inhalation of which debilitates the nervous centres and insidiously undermines our physical vigor, thus preparing us for easy victims of epidemic disease.

Experience acquired in other cities has clearly demonstrated that the only successful remedy for this abusive waste is to apply water meters, as is done with gas distribution, and collect from each tenant for the consumption, as shown by the meter, fifty gallons per capita, which quantity European practice has shown to be doubly sufficient for all necessary domestic uses, and this quantity should be supplied by the house owner.

Water meters are rapidly becoming of universal employment, and with the happiest results.

When applied in Berlin the consumption of water fell to one-half of what it was before. In Atlanta, Ga., before applying meters to the water supply, it did not reach the upper floors. After applying them, streams from the street hydrants reached above the highest building, so as to supersede the use of its steam fire engines for the extinction of fires. If applied in Havana we would have an abundant supply for all floors for all domestic purposes.

It is my concept that proper sewerage and drainage systems and regulation of our water distribution demand our first attention, and that a proper sewerage system means one that will carry all excreta and slop-waters not only out of the house, but also out of the city limits, within twenty-four hours of their delivery to it or before putrefaction invades them.

Such systems being established and good modern pavements added to them, a long step forward in sanitation will have been taken, although serious problems will still confront us.

After drainage of ground and storm water, our heavy soil and clayey subsoil will still retain a moiety of humidity. How shall we exclude it entirely from the walls of our buildings and how secure perfect ventilation and perflation of our habitations?

Opposing these last problems stand the habits and customs of antiquity firmly intrenched in inveterate inertia, which is widespread. Also we have before us no less a problem than that of a radical reform in the plan of domestic constructions, although the new plans will always have to be more or less subject to local conditions.

These conditions in many parts of the city will not admit of cellars beneath the domiciles, and in these parts the whole surface to be covered by domestic structures should be overlaid by concrete, besides a damp course at the foot of the walls just above the ground level.

On the present ground plan of domestic construction here perflation of the habitations is in most cases impossible. The whole site is covered by the building, with exception of a short and narrow courtyard, closed front and rear, and the habitations are internal rooms, the parlor alone fronting on the street, while the rear side of the house joins back to back with those of the next street.

I have witnessed the same ground plan in the houses of Pompeii, practised two thousand years ago.

In order to secure the necessary perflation of habitations the courtyard should be transferred to the rear of the site and extend to its whole width, occupying at least 25 or 30 per cent. of its sur-

face, thus the houses on adjoining streets being on the same plan; the two yards together would practically give to both houses a space for mutual perflation equal to 50 per cent. of one site, and with the doors and windows of the domicile opposite to each other, a perfect perflation would result.

This reform in the ground plan should be enforced on all new structures, but the old part of the city now built solid—many houses built upon the entire lot, with little or no yard—will be very difficult to reform so as to obtain for them sanitary conditions.

The introduction into them of modern water-closets connected with modern sewers and rigid and frequent house-to-house inspections, in order to insure their being maintained in comparatively aseptic condition, will be the only recourse. Female inspectors are employed in England for house-to-house inspections of domestic premises and are likely to penetrate deeper into hidden corners of domestic households than would male inspectors. It is an absurd heresy to believe that public welfare has no right to investigate into the dark corners of domestic premises and draw the skeleton from the closets into the light of day.

Also it is a hopeful, consoling thought that prospective electric tramways may soon make beautiful and healthful building sites accessible to our citizens upon near suburban heights.

I have here presented you with the leading indications which occur to my mind with respect to the possible sanitation of Havana. But they are not complete without some consideration of the subjects *of the final disposition of the sewage, the extinction of the contiguous pest-breeding swamps adjoining the city and the sanitation of the harbor.*

These subjects I have treated extensively in the public press and otherwise during the last twenty years, but in order not to extend this paper to tire your attention I shall here limit myself to a brief reference to them.

Of the first I will only say that for its collection and rapid transmission outside of the city to a common receptacle, I consider the separate system of salt-glazed sewer pipes infinitely the best and most desirable. Also, as the topography of Havana is mostly as Nature left it, and on many points is little above sea level, it will be necessary to divide the city into various drainage districts, with an outfall well in the lowest point of each, in order to obtain sufficient declivities for rapid gravity collection, and in each of these an electric pump or a Shone ejector to transmit the collections to the common receptacle outside the city.

As to its final disposition, I will say that Berlin expels hers through cast-iron pipes of one-metre diameter to her irrigation fields, some of which are from twelve to fifteen miles distant from the city. Even if the sewage of Havana is to be cast into the sea, it should be delivered to it at least ten miles to the eastward of the city, in order that no part of it may return to pollute the shore near the city limits.

In no possible contingency is it admissible that any of it or its effluent from chemical precipitation be permitted to escape into the currentless waters of our harbor, which is already little better than a stagnant cesspool.

You are now in possession of some of my views of the sanitary problems of this city, resulting from thirty-five years of residence herein. If the indications that I have given are carried into execution we would then find ourselves in far healthier surroundings: but the general problem is still further complicated by the presence of pestilential swamps adjoining the city on its southern border and a landlocked, currentless bay into which the city has been draining its putrescent excreta for centuries.

This swamp, or morass, has been formed by the sedimentary deposits brought down by the River Luyano and various creeks that empty into the shallow southern side of the bay. Into one of these creeks the public slaughter houses have been dumping their blood and offal during centuries, and the flood tide that only rises here about fifteen inches pushes said offal back into the soft ooze of the morass, and then leaves it exposed to the scorching sun at every ebb of the tide. Add to these conditions the well-known effects of the mixing of the fresh waters of the creeks with the salt waters of the bay within the morass, and the gravity of the situation is at once apparent.

The remedy that I have often suggested in the public press and in various pamphlets, with maps and plans, is as follows: Suppress the inversion of the slaughter-house wastes into the bay and isolate the morass from it by extending a sea wall from the north side of the Atares Fort due east to the railroad station at Regla, interrupted only by the entrance of the Luyano River, to be conducted through the morass by parallel walls; also gathering into it the discharge of the other creeks, except that of Peñalver, suppressing its blood and offal.

If we now draw an imaginary line parallel to the proposed sea wall at 600 metres to the north of it we enclose between the two a

part of the harbor where ships formerly anchored and, not fifty years ago, but now, is encumbered with sedimentary accumulations from two to four metres deep, that are gradually encroaching upon and filling up the harbor.

By the employment of modern hydraulic dredges, such as are used in the harbor of Liverpool and the Mississippi River, and the Delaware, used at Philadelphia, these sedimentary obstructions may be transferred from the harbor to the morass on the south side of the sea wall at a cost that would not exceed twenty cents per cubic metre, and the material dredged would be more than sufficient to raise the surface of all that part of the morass lying west of the River Luyano to the level of two metres above tide water.

The part east of the Luyano River could be drained as is done in Holland by pumping, and very valuable horticultural territory would thus be reclaimed.

There remains to be considered another part of the subject, reliable data for which have not yet been obtained by experimental research. I refer to the obtension of the very desirable desideratum of producing currents within the bay or harbor.

I published, in the month of January of the year 1886, a map or plan for a hypothetical consideration of this problem, a copy of which I here exhibit for your inspection.

It was based upon the supposition, yet to be experimentally ascertained, that the Gulf Stream runs in contact with the projecting nose of our coast just beyond the battery of Santa Clara. According to the hydrographic map of the Spanish Government, the submarine bottom at that particular point of the coast is nearer to the surface, thus favoring the projection of a strong stone dyke five or six hundred metres into the sea, in a northwesterly direction, to intercept that current and turn it through our bay by a canal 50 metres wide by 8 metres depth of water.

If any portion of the Gulf Stream could be thus intercepted, the continued force of the current pressing it forward would raise its level by reason of its contraction of the waters by the funnel-shaped mouth of the canal, and thus give increased impulse to the current within the channel and into the bay, where so large a volume of water would be sufficient to create some movement in the waters.

If currents within the waters of the bay and harbor of Havana may not be obtained by this means, then my own ingenuity fails to resolve this part of the problem.

ESTIMATED APPROXIMATE COST OF THE SEA WALLS FOR ISOLATING THE MORASS AND LUYANO RIVER FROM THE HARBOR.

For the dyke or sea wall extending from the Atares Fort to the Fesser Railroad Wharf:

Length	2,000 metres	Cubic metres.
Height	6 "	
Thickness	1 "	

$2{,}000 \times 6 \times 1 = 12{,}000$

Hydraulic masonry, at $10 per metre, is $120,000.

For the double dyke for the conduction of the River Luyano through the morass:

Length	800 metres
Average height	4 "
$800 \times 4 \times 2 = 6{,}400$, at a cost of $8 per metre	$51,200
20 per cent. for contingencies	34,240
Total	$205,440

Estimate for cost of hydraulic pumping of sedimentary accumulations from the harbor, transferring it into and filling morass:

5,000,000 cubic metres, at 20 cents	$1,000,000
Total	$1,205,440

Estimates for maritime canal to create currents in harbor:

Length of canal	4,000 metres		
Width	50 "		
Depth of water in canal	18 "		
Average depth of excavation	13 "	2,600,000	
		400,000	for contingencies
Total		3,000,000	c. metres

Of this 1,000,000 metres dolomite rock, at $2 per metre	$2,000,000
2,000,000 metres earth, at 50 cents per metre, equals	1,000,000
Equals	$3,000,000
80,000 cubic metres walls, at $5, equals	400,000
Filling shore from Battery de la Reina to Punta	100,000
Total	$3,500,000

The marine dyke, or Malecon, would cost about $6,000,000 more.

THE PREVENTION OF WATER-BORNE ENTERIC FEVER AMONG SOLDIERS AND OTHER PERSONS.

Pretty much every one fully recognizes the fact that typhoid fever, like most of the other prevalent infectious maladies, is emphatically a preventable disease. Indeed, it has been well said by one authority that every case of typhoid fever which ends in death might be justly considered an instance of manslaughter due to carelessness; for without doubt, if all the bacilli escaping in the fæces, urine and other discharges of typhoid fever were promptly treated as soon as they left the patient's body, typhoid fever would practically cease to exist. While it is true that the typhoid germs sometimes find their way into the body in raw food, such as uncooked oysters, and upon vegetables which have not been cooked, but which have been fertilized with night soil, it is also a fact that in the vast majority of cases the typhoid infection occurs through water which is taken by the patient after it has been infected by discharges of persons ill with this disease. Particularly is this the chief source of infection in the various great epidemics that occur from time to time, and without doubt the large mortality and morbidity in the British army during its South African campaign has been due to the infection of drinking water. On the other hand, it is almost impossible in such campaigns to see to it that all discharges are properly disinfected, and to prevent careless soldiers from drinking freely of water which is polluted, chiefly because their thirst is sometimes very great, and also because it is impossible to impress upon soldiery the fact that by this means fatal infection may occur. Of course, it is a fact that boiling the water will kill the micro-organisms, but many times this is impossible, and even when it is attempted, it is sometimes done so ineffectually that the bacilli are never sufficiently exposed to high heat to kill them.

The great object has been to find some substance which, when added to water which was under suspicion, would destroy any infecting micro-organisms and yet would fail to produce any deleterious influence upon the more highly organized protoplasm of the intestinal canal of the individual. This difficulty has been so persistent and so great that no satisfactory means have as yet been devised for the attainment of disinfection of water except by boil-

ing, unless it be by the employment of a filter which not only removes ordinary impurities but is germ-proof as well. Manifestly, the employment of germ-proof filters in armies in the field and even in private practice is in the greater number of cases absolutely impossible, because of the difficulty of transportation or the inability of the ignorant to keep the filters in such a condition that they will be of real value in purifying the liquid. It is therefore with very considerable interest that we have read a paper in the London "Lancet," of January 26, 1901, by Louis C. Parkes and Samuel Rideal, in which they have detailed experiments made by them to determine what substances could be added to drinking water with the object of making it innocuous, should it contain typhoid or other infecting micro-organisms. It goes without saying that the substances which are to be employed for this purpose must occupy a small space and be readily carried. The substance which they employed in their experiments consisted of sodium bisulphate, tartaric, citric, nitro-hydrochloric and sulphuric acid. In the cases of these various acids it was found that they were impracticable either because they had to be used in large proportions of the acid, or else that they failed to destroy the micro-organisms unless they were in concentrated form. Another difficulty with these various acids is that they are not practical for armies in the field owing to their fluid character, as it would be impossible for a soldier to carry with him the liquid acids without danger of producing acid burns and other disagreeable sequences.

Acid sodium sulphate, which is not official either in the United States or the British Pharmacopœia, proved to be an active substance capable of disinfecting water and rendering it safe, and also capable of being put into such form that it can be readily carried without it in any way inconveniencing the soldier who has placed it in his kit. While it is true that sodium sulphate, or "Glauber's Salts," possesses distinct purgative properties, it is also true in regard to acid sodium sulphate that the amount of sulphuric acid which is present counteracts any influence of the sodium salts in the way of producing purgation, so that there does not seem to be any danger of causing diarrhœa by the use of this preparation. Further than this, these investigators point out that the minimum purgative dose of sodium sulphate is ½ ounce, and it is found needful to add only 15½ grains of bisulphate of sodium to each pint of water in order to render the germs incapable of producing infection. As a man is not apt to drink more than seven pints of water a day, a sufficient quantity of the salt is not taken in twenty-four

hours to produce purgative effects; and they adduce evidence to show that the bacillus of typhoid fever is killed by exposure for only five minutes to a solution of sodium bisulphate in the proportion of 1 drachm to 500 cubic centimetres—that is, 15 grains to the pint of infected water. It is, however, better that the exposure should continue for from ten to fifteen minutes, in order that full action may be insured.

Acid sodium phosphate and sodium sulphovinate were employed, but they did not approach acid sodium sulphate in their efficiency, and were discarded. Parkes and Rideal therefore recommend that sodium bisulphate be put up in compressed tablets of five grains each, prepared in such a way that they dissolve quickly when added to water, and that they should in turn be placed in a small metallic box which will hold about a quarter of a pound of these, equivalent to 350 tablets. This will be enough to sterilize over one hundred pints of water at the rate of three per pint. A box of this character could very readily be carried by every soldier, and if three of the tablets were added to a pint of water fifteen minutes before it was drunk, they think that a large number might escape infection. As only in a few instances are drinking waters so heavily loaded with typhoid bacilli as to make the disinfection of the fluid difficult, it is highly probable that only in very badly polluted waters which have been infected by concentrated urine containing millions of typhoid bacilli would acid sodium sulphate prove useless. As a general measure possessing some value, incapable of doing harm and capable of doing good, this suggestion seems to us to be at least worthy of trial.

Furthermore, it has been found that one of these tablets of acid sodium sulphate, if placed in the mouth in the absence of water, causes a free secretion of saliva and does much toward putting aside the thirst from which an individual may be suffering when he is unable to obtain water which is pure. These investigators claim that this use of acid sodium sulphate in the mouth has already been tried in South Africa, and has proved efficient, those who have used it claiming that it gave much relief in a parched condition of the mouth, and of the upper respiratory tracts, by promoting secretion.

Researches of this kind are certainly in the right direction, and we trust that these investigators may see their way clear to pushing their studies further, and thus give us results which will undoubtedly prove important.—"Therapeutic Gazette."

INSECT FRIENDS AND ENEMIES.

From the Boston "Post."

In the economy of life as we are coming to know it through the disclosures of modern science, small things usurp the place of great things as important and controlling factors for good or for ill. A century ago the microscope was a crude instrument, spectrum analysis was unknown, chemistry had hardly begun to penetrate the mysteries of matter. The enemies of man were those that he could see with his eyes and combat, metaphorically speaking, with a club; his friends were those with whom, also speaking metaphorically, he could shake hands. To-day it is the intangible foes against which we combat, the unseen influences which we welcome as congenial and healthful. We no longer guard ourselves against the ravages of wild beasts, but against the insidious attacks of invisible microbes; we do not try to ward off disease by dosing in spring or sweating in winter, but by a watchful vigilance over contamination of the water supply and testing for tuberculosis the cows which gave our milk.

But without going quite so far as this into the life which was invisible a century ago, and which bacteriology and microscopy reveal to us to-day, we have found in the smaller but yet visible insect world the source of many of our woes and the active element in many of our great achievements. The plague which attacked the vineyards of France threatened the extinction of a great national industry, until Pasteur found the way to destroy the phylloxera. The San Jose scale was rapidly wiping out the orange groves of California until science discovered, on the other side of the world in the antipodes, another insect, the natural enemy of the scale bug, that has saved the situation. Here in Massachusetts we have the gypsy moth, that insignificant flutterer, that has laid waste large territory and has been little disturbed by warfare costing the State half a million dollars.

As affecting human life, it is very lately that the communication of disease by insects has been demonstrated. In the transmission of typhoid germs, the agency of the flies swarming in the horrible fever camps established through the incompetence of the War Department during the Spanish war was clearly shown. The mosquito has for some time been suspected and has been held under close observation by scientists. It is now satisfactorily

established that malaria, heretofore held to be caused by exhalations from the earth, is a germ disease whose infection is carried by the mosquito. The bacillus of malaria, it is shown, must pass through the mosquito in one stage of its development before becoming active in the human body. Although the proof is not yet absolute, experiments give reasonable cause for belief that the infection of yellew fever is carried by the same insect.

These conclusions, at which science has arrived through patient investigation, harmonize with what we knew through ordinary observation of the origin of these diseases. That is to say, in the cold season, when there are no mosquitoes, no one acquires the malarial taint. Also, as everybody knows, the first hard frost, which puts every mosquito out of action, stops short the spread of yellow fever in our Southern States. Moreover, the precautions which have been taken in Havana against yellow fever as a filth disease have not proved effective, and so clearly has it been demonstrated that the infection is carried by the mosquito, that General Wood, in command in Cuba, has issued orders for the use of insect nettings in hospitals and camps in that island, and for petroleum to be spread upon the stagnant pools where these insects breed.

Such are the more notable instances of insect hostility. The most recent, and perhaps the most significant, of the beneficent work of insects is found in the development of the production of figs in California. Figs grow in nearly all warm countries, and superior table figs are found in many localities, including our Southern States and California; but none, when dried, have been found to compare with the Smyrna fig, which is grown successfully in Mediterranean regions only. It is nearly twenty years since an attempt was made to establish the cultivation of the Smyrna fig in California. A large number of cuttings were imported and planted, but when the fig trees came into bearing the fruit failed to mature, dropping to the ground after reaching the size of a marble. What was the cause of this failure? The ancient history of the Smyrna fig was looked up, and Dr. Eisen, a member of the California Academy of Sciences, found that since before the Christian era, as pointed out by many early writers, Aristotle and Theophrastus among them, it has been the custom of the Orientals to pluck the fruit of the wild, or so-called Capri, fig trees at a certain time of the year, and to suspend them in the branches of the Smyrna or cultivated fig trees. He pointed out also that there

issued from the wild figs a little insect, which, covered with pollen, entered the cultivated figs, and that the latter afterward developed and ripened into the beautiful, sweet Smyrna fruit. He further pointed out that the young Smyrna fig contains female flowers only; that without the introduction of pollen the seeds will not form, and that upon the formation and maturing of the seeds depends the persistence and ripening of the fig, which is not a fruit of the ordinary kind, but a receptacle filled with a mass of small flowers.

Here was the solution of the problem. Dr. L. O. Howard, secretary of the American Association for the Advancement of Science, tells in the "Forum" how it was availed of. The little insect was brought over alive in Capri figs and issued in this country, but without reproducing. Then, in 1899, convinced that the conditions were at last favorable, the United States Department of Agriculture again took hold, and through one of its travelling agents, secured over-wintering Capri figs in Algeria and sent them to California. These figs, in the spring of 1899, gave forth the beneficial insects in the Fresno fig orchards. All through the summer of that year the insects bred undisturbed, passing through four generations, and increasing in numbers, and the winter of 1899-1900 was successfully passed by them in small figs upon three trees protected from the frosts by a canvas shelter. In the spring of 1900 they issued, laid eggs, and another generation developed in the wild figs, and at the proper time were transferred to the Smyrna trees, where they entered the figs and pollenized them, just as their ancestors have done for unnumbered generations in Mediterranean countries. The Smyrna figs did not drop to the ground, as they had been doing every year since 1889, when the trees first began to bear. They again ripened, and in August and September fifteen tons were harvested. These figs have been tested chemically and found to contain 1.4 per cent. more sugar than the imported figs. Moreover, unprejudiced experts have unanimously declared them to be superior to the imported product.

Thus not only in the protection of the human race from the perils of disease, but in the multiplication of comforts and luxuries, and in the increase of production and the advance of commerce, science opens to the twentieth century a new vista of progress through its knowledge of agents and influences which have heretofore been held as small and insignificant.

MILK CONTAMINATION AND HOW BEST TO PREVENT IT.

By D. S. Hanson, M.D., Cleveland, Ohio.

In order to fully appreciate the painstaking work necessary to prevent milk contamination, it is requisite that all the details of its production and transportation be thoroughly understood, as well as the element of time taken in handling it, taken into consideration, for it is well known that milk of a very good quality soon deteriorates even where the most perfect practical methods are used for its preservation.

I say practical methods, for milk can be kept sterile for a considerable length of time (probably several months), but details necessary are such that milk for general consumption cannot be distributed in that condition. This subject has been discussed by Medical Societies, Boards of Health, etc., very widely. No doubt the agitation of the subject has done much good, yet only to a very limited extent has anything of a true practical nature been accomplished. The immensity of the business (the estimated number of cows in the United States being 5,500,000) would warrant much more attention than it has received.

The subject may conveniently be arranged under two divisions, namely: 1st, Methods of Contamination; 2d, Prevention of Contamination.

1st. Methods of Contamination can be subdivided into

(a) Diseases affecting cow, her food and surroundings.

(b) Contamination while being milked and gotten ready for shipment at the dairy.

(c) While being transported and delivered to consumer.

(d) After milk is in consumer's possession.

2d. Prevention of Contamination covers a wide field, and can only anywhere near approach perfection by constant, intelligent supervision from the pasture field, watering place, and food trough to its final delivery to the consumer, and after it is in the consumer's hands by general education of the masses in hygiene in general.

In order to more fully put before you the immensity of this traffic, I wish to quote some statistics showing amount of milk

used in some of our large cities. It is said that 1,250,000 quarts are used in New York city daily. That would mean milk from about 155,000 cows, and that about 31,000 milkmen have been employed in milking these cows, that 62,000 hands have been used in the work, and that most of them are wet with milk and that a very small per cent. have been washed before milking, a fact to which I am sorry to be obliged to call your attention.

In regard to diseases liable to affect the cow, of course tuberculosis holds first place, and in some localities seems to be present to an almost alarming extent.

H. E. Annett's experiments show tubercle bacilli were present in the milk used in the English cities in from three to thirty per cent. of tests made (inoculation of animals was the test used), and in butter in from ten to forty-seven per cent., but that they do not live in butter more than twelve days. Out of twenty-eight samples of oleomargarine they were present but once. This latter observation points to the fact that butter used in the manufacture of oleomargarine is usually more than twelve days old, and the moral would be "eat oleomargarine." It is a well-known fact that a cow can be affected with tuberculosis and yet give non-tubercular milk, in fact, is not liable to do so unless extensive general tuberculosis be present or else tuberculosis of teats, milk glands, or udder exists. It would seem the sensible thing to do, to examine milk and destroy the animal only when she gives milk containing tubercle bacilli, instead of the expensive, not to say questionable, proceeding of slaughtering them because they react to the tubercle serum.

Is there great liability to contract tuberculosis from the use of milk that occasionally contains tubercle bacilli? Or putting it more strongly, is tuberculosis disseminated in the human being by use of tuberculous cow's milk? This opens up a wide field, and no doubt opinions would be very different, yet by a little observation much can be learned.

Tuberculosis is hardly more prevalent or fatal in the United States and England than in Germany, while milk is used raw very largely in the two former, and is very generally sterilized by boiling in the latter country. Woodhead carefully examined 127 children that died of tuberculosis and found the mesenteric glands involved in 100 of them. Osler relates the instance of a milk dealer whose herd was giving tuberculous milk, and withdrew his milk from the market and fed it to a litter of pigs, which all be-

came affected with intestinal tuberculosis. Is there any reason to believe that young children are less susceptible than young pigs? The answer would be modified by two propositions.

We have no direct evidence of such a result, and the bacillus found in cow's milk is not exactly the same as that found in human tuberculosis. Sparsely settled regions, regions of an elevation above 5,000 feet, are almost exempt from this disease. While they probably use as much milk as other people, no doubt immunity plays an important part here, but hardly to such an extent. The American Indian and negro races are especially prone to this disease, although they use a much smaller amount of milk than the white race. Primary intestinal tuberculosis is uncommon in the human being, which would not be the case if it was at all generally produced by milk consumption. Hydrochloric acid or gastric juice is very destructive to the bacillus, and probably under ordinary conditions few, if any, pass through the stomach alive, and providing some do they hardly would infect from the intestine if mucous membrane was intact. We do not deny the possibility of infection, but the practical question is, how large a proportion of those using tuberculous milk become affected? This can only be answered, in the light of facts before us, by saying that there are not nearly as many as alarmists would have us believe. The writer's opinion, based upon years of observation is, that children who consume much milk during early life, say up to fifteen years of age, are better equipped physically, have less skin and digestive diseases, and really have a lower mortality from all causes, tuberculosis included, than those deprived of this useful food. Cattle are, of course, liable to acute diseases, but fortunately give but little milk during an attack, and the same may be said of most chronic diseases, tuberculosis being the main exception. The disease of milk glands known as garget is quite common, and the average farmer thinks such milk not sufficiently bad to warrant throwing it away and into the can it goes. Once seeing a farmer emptying a few quarts of this kind into a can, I protested, telling him that it might easily cause some bottle-fed infant to become sick, or, still worse, some sick one to die. He said so small an amount in the whole mass would do no harm, besides he received such a pittance for his milk that he could not afford to throw it away.

New milk (that is the secretion of milk glands for first two or three days after dropping calf) is not generally considered fit for use, but quite generally goes in to enrich the mass sent to cities.

Milk, sometimes even deadly in its virulency, is many times the result of food taken. The most notable example of this is the disease known as "milk sickness," and associated with the disease in cattle known as "the trembles." It has been demonstrated experimentally that an ounce of butter or cheese or four ounces of the meat from these animals, either raw or boiled, given to a dog daily for six days, will produce death. Although the exact cause of the disease is not definitely known, it is generally admitted to be due to some plant consumed by the animal. I believe new countries and certain localities only suffer from this disease.

Digestive diseases are most common during periods of drouth, when cattle are obliged to eat weeds and plants which they avoid when grass is abundant. Marked examples of the influence food has on the quality of milk are those of the milk and butter being scented by the leeks eaten by the cows in certain localities in the Western States, and the unwholesomeness of milk given by cows in cities when fed on cabbage leaves and other garbage. These are so well known that I hesitate to mention them. Those fed on malt and refuse from breweries and distilleries come under the same heading. There should be care of the cows not only in regard to food and water, but also in relation to construction of stables, ventilation, light, bedding, condition especially of stable floor (the latter often are afloat on a reeking mass of filth in latter part of winter and spring months, and in such cases the cow is usually pretty well plastered). This is not overdrawn, but is supported by facts altogether too numerous. Can milk from cows in such surroundings be a good article?

Probably the most prolific source of contamination occurs while milking is being done. Who ever heard of a milkman washing his hands before milking? Most of them wait until they are actually doing the work, and then wash them in the milk. Many times I have seen four dimples in froth on milk in milk pails, two where the streams of milk penetrated, the other two, dark brown ones, where milk drips from hands. Many milkmen think they cannot milk without first wetting teats with milk and consequently persist in this filthy habit. Water is not usually handy to milkyards or stables, consequently udders and teats rarely get washed.

The cow is a restless brute, especially inclined to be uneasy while being milked, occasionally kicks and now and then plants a filthy foot in the milk pail. (Such milk is usually strained before going into the can). Hair, insects, hay, straw, blood, pus, particles of earth and more or less cow manure constitute the most

common foreign elements that get in at this time. It is estimated that New York City consumes thirty tons of cow manure a year in milk. It cannot be entirely prevented, but can be very much lessened, if only more care were taken and result of the evil more generally appreciated. Also, at this time milk often has been made deadly by contamination with disease germs. They get into the milk in a variety of ways; most common, perhaps, is that by washing utensils with infected water. Scarlet fever, diphtheria and typhoid are no doubt often produced by the use of milk so infected. Scarlatina is unknown in countries where cow's milk is not used for food, which many authorities think is due to this source of transmission being absent. A common source of trouble comes from improper cleansing of utensils at this time, minute particles adhering to cans, pails, etc., being a nidus for rapid bacterial development in fresh milk that is added. Milk may contain enough butter fat, solids, be strained, and yet be very bad from this cause alone. The various preservatives such as borax, salicylates, paraldyhide, etc., are all bad and should never be used, and at the best are only a "premium on shiftlessness." Their use cannot always be laid at the producer's door.

Methods of contamination while in the hands of the shipper and dealer are mainly from removal of covers from cans for various purposes, thereby allowing particles of dust and various other minute substances to gain entrance, and quite generally such substances favor bacterial development. To illustrate the care necessary, I once saw some trainmen unloading empty cans at a country road crossing. Beside the track was a ditch filled with stagnant water and mud, and they thought they were having lots of fun by slamming cans in this ditch to see how dirty they could make them. Such a can could again be made fit to put milk in after more work than the average producer would care to give. The rate of multiplication of bacteria under favorable circumstances is such that it would stagger the uninitiated. In very good milk as it comes from the udder, the number is usually from three to four thousand per cubic centimeter, while milk as delivered in the city usually contains from three to six millions per cubic centimeter. After the milk is in hands of consumer, the methods of entrance of impurities are many; the most common are from unclean dishes, keeping in living rooms, exposure to disease germs and lack of proper facilities to keep correct temperature. Good work in the line of inspection is now being done by

the Philadelphia Pediatric Society. A committee has been appointed consisting of a bacteriologist, a veterinarian and a physician. They are noting all the conditions under which milk is obtained. Any farmer or milk producer that allows a thorough inspection once a month is given a certificate if the milk comes up to the standard fixed by the society. This plan at least has the right method in vogue, and will accomplish much good if faithfully carried out.

I understand at the present time the milk inspectors of New York City are appointed under civil service rules, and only the ones passing best examinations are chosen. Since this rule has been in force the relation of the producers and inspectors has been cordial, for the former is sure of fair treatment. Many of our smaller cities are making more or less abortive attempts at milk inspection, principally relying on penalties enforced on the producers when milk does not contain enough solids and butter fat, nothing whatever being done to keep out impurities.

2d. Methods of prevention of contamination that might and should be faithfully and earnestly carried out are many. Hygienic laws that are useful generally are especially useful here, and when more generally understood milk inspection will be greatly simplified. Common honesty would do much to better matters, but unfortunately many individuals are not willing to sacrifice time, work and profits for the sake of keeping conscience clear.

A man that has had his training entirely in the city and has no practical knowledge of farming in general and milk industry in particular, be he ever so well educated, is not the man for this work, for the farmer will find out in about one minute that he does not understand the business, and will only listen to his suggestions in a spirit of derision and let the advice, as the old adage is, "go in one ear and out the other."

The man that will sit on a milkyard fence with high collar and patent leather shoes, and ask the farmer if his cows will bite, is not the man to gain the latter's confidence and co-operation.

Above description of the man not wanted also suggests the man necessary for proper work here. A man educated, cleanly in habits, faithful and honest, and willing and anxious to observe every detail and so far as possible correct every evil is the man needed.

What has he to do? See that milk is not shipped when contagious disease exists on premises, see that cows have proper food

and water, and are healthy, that stables are properly cleaned, lighted and ventilated, cows properly bedded and not confined too continuously, that hands, teats and udders are clean, that the *dry process* be used in milking, that milk utensils are properly cleaned, that no filthy or diseased milk is emptied into can, that a proper strainer is used, that no old milk is emptied into the fresh, that no chemical preservatives are added, that milk is properly cooled before can is covered, that cans are not opened on trains, that the milk does not stand around depots for several hours after being delivered before milk peddlers come to take it away, and that the peddlers do nothing to *improve its quality*, and he might extend his good offices even into the home of the consumer to good advantage.

Examinations for germs aside from tubercle would not be necessary if the foreign substances were kept out. It is not that the producers and handlers of milk do not understand these matters generally pretty well, but they are careless about their proper enforcement, they do not fully realize the great disaster that might easily follow carelessness or dishonesty in any minor detail.

The trite saying, "Eternal vigilance is the price of liberty," might apply here if changed to "Eternal vigilance is the price of pure milk."—"Columbus Medical Journal."

PRODUCTION OF BANANA FLOUR.—The *Journal de la Chambre de Commerce de Constantinople* says:

"According to a report of the Colonial Institute, in Marseilles, banana flour is manufactured to a considerable extent in Guiana, Central America, Colombia, Venezuela, East Indies and in the Malay Islands. An attempt to manufacture this flour for export to Europe was made in German West Africa, and in the Peninsula of Malacca, but with little success. The manufacture of banana flour is very simple. The unripe banana is cut and dried, then ground and sifted. The fruit yields from 20 to 25 per cent. of flour. The chief difficulty encountered in its manufacture consists in preserving its yellow color. For this reason the apparatus used must be either of aluminum or silver, since iron turns the flour black. The banana flour is very nutritious, and is not inferior to the best corn meal. France has no market for this product, but a small quantity is exported to Great Britain, where the price is $130 per ton (2,240 pounds)."

THE ARSENICAL BEER-POISONING EPIDEMIC IN ENGLAND.

By RAYMOND CRAWFORD, M. A., M. D., M. R. C. P.

From the "Therapeutic Gazette" (March, 1900), London Letter.

I have avoided sending any account of the epidemic of arsenical poisoning in the north of England and in the Midlands until the evidence was complete. We have recently been fortunate enough to hear an admirable exposition of the facts from Dr. Septimus Reynolds, of Manchester, who has played a principal part in tracing the epidemic to its source in beer, and as the matter is one of universal importance I will endeavor to give an outline. The first feature to attract attention was the occurrence of an unusual number of cases of indefinite skin eruptions, such as erythema, keratosis and pigmentation, particularly among pauper patients. Incidentally we may remark that the observation throws a strong light on one of the chief determining causes of pauperism. A few months later about six patients presented themselves in as many days suffering from typical erythromelalgia, not only of the feet but of the hands as well, while cases of herpes zoster became remarkably frequent. Subsequently a succession of cases of so-called "alcoholic paralysis" applied for admission to the Workhouse Infirmary. It is difficult to fall in with Dr. Reynolds's disbelief of the dependence of any case of "alcoholic neuritis" on ethyl alcohol, for there are certainly many cases of the disorder in a typical form that cannot be traced either to arsenic or to beriberi, and in which there is an unmistakable antecedent history of spirit drinking. Here, however, we come to a conflict of fact, as Dr. Reynolds asserts that he has never seen a case except among beer drinkers. His next observation was that the skin eruptions and the neuritis occurred in the same subjects, and here was the key to the discovery, for arsenic is the only drug known to produce herpes. Thereupon the beer was tested for arsenic by Reinsch's test, and well-marked crystals of arsenious oxide were found.

Meantime Professor Delépine had succeeded in tracing the arsenic to certain sugars used in brewing. These were invert sugar, made by the action of sulphuric acid on cane-sugar, and glucose, made by the action of sulphuric acid on various forms of starch. Large quantities of arsenic were found in the sulphuric acid, which is made from a highly arsenical Spanish pyrites. The quantitative

analyses of Professor Delépine were given by Dr. Reynolds, as follows, the arsenic being estimated as arsenious oxide: Various beers were found to contain from two to over four parts per million —that is, from 0.14 to 0.3 grain per gallon. The invert sugar contained 0.25 part per 1,000, the glucose 0.8 per 1,000 and the sulphuric acid no less than 1.4 per cent., or four ounces per gallon. As Dr. Buzzard pointed out, on the average of the samples of beer investigated, a patient would take a quantity of arsenic equivalent to about two-thirds of a minim of Fowler's solution to a glass, and a moderate drinker would only take a very small proportion of the amount of arsenic given to an epileptic patient. This would suggest either a special tolerance to arsenic in combination with bromides, or a special intolerance to arsenic in combination with alcohol, or some casual susceptibility of the individuals to arsenic in any form. The latter condition is, of course, not unfamiliar, but at a much higher dosage than that named.

Arsenic may also get into beer from other sources. Thus it is contained in hops treated with sulphur; in samples of malt, finding its way there either from sulphur or from anthracite coal; also in the vulcanite tubes used for conveying the beer to the pumps; while sulphuric acid is occasionally used, and calcium bisulphate both in "fining" the beers and in cleansing the barrels.

It is impossible to estimate the extent of the present epidemic, but at the lowest calculation 2,000 cases are known to have occurred in Manchester alone. The clinical picture derived from so extensive a series of cases is well worth a careful study. It will perhaps be more readily appreciated if at the outset we summarize the main conclusions. Arsenic is a cumulative poison that affects both the skin and the respiratory and digestive mucous membranes, the sensory and motor nerve trunks, the voluntary muscles and cardiac muscle and the liver. Reynolds corroborates Brouardel's statement as to the sequence of symptoms. They are: (1) Digestive symptoms; (2) laryngeal catarrh, bronchitis and acute skin symptoms; (3) disturbances of sensibility; and (4) motor paralysis (and pigmentation and keratosis). The cases fall roughly into four groups: (1) Those with all symptoms fairly well marked; (2) those with skin lesions principally; (3) those with cardiac and hepatic lesions principally; (4) those with paralytic lesions principally. The course of the disease is slow; the digestive and bronchial catarrh pass off first, then the acute skin lesions that give place to chronic. The sensory symptoms may last for months, and the motor symptoms even up to two years. In fatal cases death is

usually due to heart failure, either sudden or gradual. The aspect of the patients is in many cases sufficiently typical to suggest the true diagnosis. The face is puffy, especially about the eyelids; the eyes are watery, and in some cases there is even subconjunctival œdema, while the vessels are congested even to the degree of hæmorrhage. The color of the face varies from crimson to dusky red or even coppery. At first the patient, like Agag, "walks delicately," as though his soles were sore; in later stages there is the typical steppage gait. The voice is often husky. The skin lesions are often multiple and invariably present in some degree. Erythromelalgia is perhaps the most constant; in the feet the soles are crimson-colored, not as a rule uniformly, but chiefly at the parts where the sole comes in contact with the ground. A similar condition is found in the hands, most marked on the thenar and hypothenar eminences, and on the palmar surfaces of the terminal phalanges, the centre of the palm being normal in color; the soles and palms are more or less bedewed with perspiration. They are tingling, burning hot and painful, so that the patient bares them for the sake of coolness and cannot abide even the pressure of the bedclothes.

This erythema does not become pigmented, but passes on to keratosis; this is a very slow and stubborn process. It may occur in the form of a few isolated patches; sometimes these patches appear on the dorsum of the hand, between the webs of the fingers, and on the knuckles, or the whole palm or sole may be thickly covered with large grayish scales, which are being constantly shed. The soles are almost always worse than the palms. Keratosis, in the absence of pigmentation, is often a valuable feature in the diagnosis of alcoholic neuritis. Other erythemata occur, of varied character and often very irritating; scarlatiniform and morbilliform rashes may be seen on the trunk and limbs, and not infrequently an acute urticaria. Vesicular eruptions in which the lesions vary in size from a pin's head to large bullæ several inches in diameter are a late form of rash and may come on as much as six weeks after the last glass of beer has been taken.

Pigmentation does not generally occur in light-complexioned patients or merely amounts to a darkening of pre-existing freckles; in dark subjects it is invariably found. It usually follows slowly upon the erythematous blush by a slow process of transformation from red to bronze or even black. It spares, however, the palms and soles, even though universal elsewhere; nor as a rule does it touch old scars in which the corium has been destroyed, but is

peculiarly intense around the edges. Where pigment is normally marked, and at sites of pressure, pigmentation as in Addison's disease is marked; the buccal mucous membrane is not affected. On the whole pigmentation is more marked on the trunk than the face; sometimes on close examination it is seen to be punctiform. Besides this uniform pigmentation there is sometimes a patchy distribution with intervening portions of lighter skin; these isolated patches may, however, coalesce so as ultimately to produce a uniform and universal pigmentation. After many weeks the pigmented skin may undergo a branny desquamation, when if the pigmented flakes be rubbed off a healthy skin is left underneath. This sequence of events strongly suggests that the pigmentation is a cutaneous dystrophy and not a deposit of arsenic in the skin.

Herpes occurred in a small number of cases, and most commonly in the distribution of the cervical or dorsal nerves. It was never bilateral, and in no single case was seen below the knee or below the elbow. Dr. Reynolds considers that it is due to direct action of the arsenic on the posterior spinal ganglia, and fancies that the epidemics of so-called specific herpes are really referable to arsenic. This view concords with the habitual neuralgic pain that precedes the eruption of herpes. The nails often bear evidence of malnutrition in the presence of transverse white ridges; proximal to these the nail is normal, but beyond them white, cracked and thin, so as to be almost papery.

In the nervous system sensory affections have been present in practically all the cases; in the mildest mere paresthesia of the distal parts of the limbs, with tingling and numbness, but never total loss of sensation; neuralgic pains were common. In only one case was a cranial nerve affected, viz., the sensory portion of the fifth nerve. The muscle masses of the legs and arms were usually intensely painful on pressure. On the motor side the symptoms were akin to those of alcoholic paralysis and were present in as many as seventy per cent. of all cases. In mild cases slight weakness of hands and feet without muscular atrophy, and in severe cases total paralysis of the affected muscles with marked atrophy; in less severe cases the small distal muscles only, while in severe cases even the muscles of the upper arm and thigh were extensively affected. Frequently the muscles on the front of the trunk were weak, so that the patients could not raise themselves in bed, and in some severe cases there was diaphragmatic paralysis, with labored breathing and a markedly ineffective power to cough. Only in the most advanced cases was there any paralysis of the sphincters.

Mental disturbances were not a prominent feature; in some very severe cases there was, as in alcoholic paralysis, a complete loss of memory of time and of place. There was also a loss of initiation of ideas, so that the patient grasped greedily at any suggestion from another. This comparative mildness of mental symptoms would in cases otherwise severe give an important clue in diagnosis of alcoholic paralysis.

In the circulatory system weakness of the heart muscle producing various grades of disturbance and dilatation was most noticeable; this may be assigned to the arsenic quite independently of the alcohol. Edema affecting the feet, or in some cases the whole body, was commonly found. Ascites was sometimes present in fair amount, but pericardial and pleural effusions, when present, were usually less than occur in beriberi. Heart failure was the commonest cause of death.

In the respiratory system generalized catarrh is the rule, thus the husky voice is due to congestion and not to paralysis of the cords; the degree of congestion was occasionally enough to produce hemoptysis. In some of the cases there was evidence to show that in these toxic doses pre-existing phthisis was intensified by arsenic.

Digestive symptoms in many cases ushered in the other troubles. In mild cases the appetite was sometimes definitely increased, while in severe cases loss of appetite and vomiting immediately after taking food were the rule. In early stages the tongue had a silvery film like a wash of lunar caustic, but in later stages was brown, but still moist; sometimes the gums were red and softened. There was at least a suspicion that the arsenic in some cases had induced hepatic cirrhosis. Arsenic was detected in some cases in the urine. Elevation of temperature, more commonly in the early stages, with catarrhal symptoms, has sometimes suggested a diagnosis of influenza.

Cod-Liver Oil in Venezuela.—Consul Plumacher transmits from Maracaibo, November 29, 1900, copy of a contract recently made by the Government with the manufacturers of Scott's emulsion, authorizing the latter to establish a factory at the capital and granting the free introduction into the country of the necessary machinery, bottles, etc. The contract is to last twenty-five years.

THE BROOKLYN MANUAL TRAINING SCHOOL.

THE KIND OF WORK DONE.

The school has been in operation six years. At the beginning, including the principal, Charles D. Larkins, there were six teachers; now the number is thirty-five. Except by those directly interested either as instructors or students, little is known of the objects, methods or means connected with this latest important addition to the course of study furnished by the borough. The most general impression is that the school in question prepares young men and women to earn a living by their hands, and consequently that the only branches taught have to do with tools and instruments, and not with books. The fact is quite different. A full high school course of highly intellectual branches is given, with manual training added. The intention is to teach students the relation and application of theory and book knowledge to the practical affairs of life. The principle that theory without practice is of little value is the basis of all the work done. So far from being a trade school, it qualifies students for the highest positions in the industrial arts and practical sciences, and its graduates eventually find themselves employed as electrical engineers, surveyors, chemists, constructors of buildings and bridges, and so forth. What they get here is experience in handling the raw material and in making for themselves what they shall sooner or later have made by others whom they employ or direct. The school is well supplied with shops and laboratories. The most interesting of the shops is the forge, where young men wield the sledgehammer and young women shape beautiful specimens of repoussé in brass and copper, and acquire deftness in twisting and forming roses, lampholders and a hundred other ornaments out of Venetian iron.

When we consider how quickly one forgets a good deal of the Greek and French, the geometry and trigonometry and other fine things that were taught in our college days, without ever consciously utilizing one of them to advantage, we cannot but view with satisfaction a plan of instruction which turns the abstract into the concrete and clinches each newly learned principle by an actual demonstration in which the senses, in one way or another, are brought into contact with substantial things. By no other means that I know of can instruction be impressed on the memory so indelibly as to remain for life. It could be added to the credit of

the Brooklyn school system in particular that this idea has been seen in every other subject taught. As far as possible the teacher is enjoined by the superintendents to develop the objective methods no matter what the branch may be. The result is that instead of rules or principles being merely memorized, the children gain the lasting knowledge of the things themselves, without which all the rest is entirely valueless.

One of the best evidences that the Manual Training High School is a power in fitting students for their life work is that many graduates now hold positions that are eagerly sought for, but without avail, by hundreds of others who have not enjoyed the opportunities that it offers. Though the first class graduated only four years ago, several are in the service of the national government at salaries from $700 to $2,000. Some are engaged in city departments, two or three are editors of trade journals and engineering magazines. Others are draughtsmen for attorneys, a large number are employed in manufacturing houses, about twenty are in brokers' offices, some are teaching and a good many have gone into profitable business for themselves. When I add that the diploma of this school is accepted by the regents for admission to schools of law, medicine and dentistry and by colleges generally on the same terms as those of other high schools, and that the principal invariably has at his disposal a few scholarships in local and other institutions to encourage or assist those who desire such attention, it will be seen that, as was said at the first, the school, if better understood by the people, would quickly become the goal of a multitude, and a large portion of first grammar pupils who have not yet decided what they shall be, or where the next step will take them when they leave their present class, would find the puzzling question already settled for them.

There is but one impediment to the advance which manual training is making in Brooklyn; it is lack of accommodation. The buildings now used for the purpose are woefully inadequate. Whoever makes a visit, as I have done, at the time when classes are changing rooms, will be convinced of this. I stood on the stairway in a few inches of space just out of the throng of students, and shared with everybody there in the feeling of regret that so much precious time is wasted in the mere act of going from one room to another. There are now 841 students who do the best they can with conveniences not equal to more than 400 or 500. Yet out of this apparent confusion of numbers there developed a marvelous degree of order. It took a class six minutes to come

from one room down a single flight of stairs to the room directly beneath. They moved, as did all the school, with the utmost celerity and ease possible, as though regulated by military precision, though the only directing agency was their own sense of discipline and appreciation of the difficulties in the case. The principal has never had the pleasure of assembling all his charges in a body, the biggest room not holding more than fifty. Clothing is hung in the halls, and in some instances of girl students hats are not laid off at all. The library is a tiny, dark, inside room without ventilation. This is hard on the great worthies who wrought in their day for the edification of succeeding generations. In some rooms the crowding is such that students have to sit or stand in the windows. What with the din without, on Court Street, and the closeness within, the lot of the learner is indeed hard. Several useful exercises enjoyed in every other school are here impracticable simply for want of space. Such are rhetorical exercises, chorus singing, calisthenics and gymnastics. No fond parents need fear that their sons or daughters' joints will get stiff through want of exercise, however. To illustrate, class B crosses the street, that is, passes from this building on one corner of Livingston Street, to a building on the opposite corner, fifteen times a week, and climbs fifty-six flights of stairs in the same period. The drawback here met with has to do with the weather. A storm would scatter any other body of people, as it does a flock of sheep, but they do it heroically and with the best of good humor. Among the oddities of school life found here it may be noted that a class in surveying and a class in Latin imbibe from the intellectual fountain in a carpenter shop, sitting or standing. At one and the same time three classes recite in the laboratory, one in geology, one in chemistry, and one in typesetting. In one other respect this school differs from nearly every other in the borough—there are no half-day exercises. The reason is that the course is not interspersed with what are termed study periods. Where that provision is made the students can be dismissed to do the thinking and reading which it involves at home, and this gives place to others. In this school the whole working day is taken up with either brain or hand activity, or both together.

It is not surprising that citizens and taxpayers demand a remedy for what they must keenly deplore. It is even growing common for the vigilant and energetic among them to charge neglect or indifference somewhere, though they cannot fix upon any one definitely as the butt of their assault. Perhaps the truth is that

blame cannot be fairly ascribed, for no one person or set of persons is at fault; certainly not the Brooklyn authorities.

The fact is, everything connected with the system here has been overhauled or upset of late years. The wonder is that our identity has not been effaced altogether. Besides, manual training is yet new to our schools, and its merits, no less than the facilities it requires, are yet unknown to those who can do most by acknowledging one and providing for the other. The School Board, following the sound advice of the Borough Superintendent, has not been backward. Plans are now being perfected, the outcome of which will be a fine new structure on Seventh Avenue, between Fourth and Fifth Streets, with a two thousand capacity. That building, it is believed, will be ready in about two years, just in time to meet the increased demand, judging by the ratio of increase now current. In the meantime, the principal has been authorized to secure a place to serve as an annex. This he intends to accomplish so that in September of this year the trying conditions under which he and his persevering staff, together with the students, now labor, will begin to fade away into the rank of curious, if not humorous, reminiscences.

SUBSTITUTING IN BROOKLYN SCHOOLS.

The best made machinery is apt to get out of order. The smooth surface of a school's efficiency occasionally gets ruffled. This happens, for instance, when one or two teachers, through sickness or other cause, absent themselves when the bell rings to begin the day's labors. It is then that the substitute springs into importance. For a good many years it has been so difficult to secure teachers qualified to fill an emergency that when he did succeed a principal might be seen rubbing his hands gleefully, as if his richest relation had just left him enough to live upon in luxury. At last the ingenuity of the Borough Superintendent has done something that promises to make things better for the future. A number of stations, or centres, have been established, at which teachers of this class will report daily and take assignments to schools as vacancies occur. The occupation of substitutes is thus systematized, schools requiring them can be quickly supplied, and occasion for dismissing classes will be reduced, if not altogether avoided. The innovation belongs to Brooklyn. When other towns copy it, they will do well to remember this. Of late there has been plenty of grumbling about the pay of substitutes; not so much as to the amount as to the chances of getting it when earned. One of the

most efficient and esteemed teachers in our schools, one who keeps pace with every new attempt to improve the system, has stated the matter to me in these words: "A substitute may go on in this chaotic way of doing things for six months, with no guarantee of receiving pay." Underlying this criticism, there is a feeling of resentment toward Mr. Maxwell, the City Superintendent, for granting or withholding licenses for substitutes at his own sweet will. In other words, the teacher may be employed by the local School Board, both parties satisfied that the qualifications are right, and find after any length of service a payroll minus his or her name, because the City Superintendent declines to give his indorsement. There are two sides to the matter. Substitutes ought to be fully able to do good work, and the chief officer should be best judge. On the other hand, those who have served in this capacity in times when our schools sorely needed them might reasonably expect something better than a turn down. But, most of all, I should say that persons who have fitted themselves for this duty in accordance with a standard in vogue from time out of memory, are entitled to redress if, when they apply for licenses, that official confronts and balks them with some other standard. Well, that officer is the sole arbiter. There is no doubt about that. It behooves the unwary to make sure of his imprimatur before doing an hour's work by getting his license or its equivalent.

The prospect for young teachers who enter the list for casual service of the kind in question is better than it has been. The method by which they were employed in the past has not been businesslike. No certificate was positively necessary, though the majority trusted to the much-talked-of litigous C certificate. The principal usually accepted the first comer. At present only holders of substitute licenses or of A or B certificates are eligible. The salary is higher. Within a year an increase has been made from $1 to $1.50 per day for both sexes, to $2.50 a day for women and $3 for men. A further improvement is found in regard to the manner of paying. Formerly the absentee received full pay for the month, and handed over to the substitute the sum owing. When the academic year ended the principal sent to the secretary of the School Board a certified statement as to such payment, and a request to have the money refunded. At the end of another year the amount came back to the applicant. By the latest plan the monthly pay of an absent teacher is reduced by one-thirtieth for each day of absence, and the substitute is paid directly by the Board, and at the same time as regular teachers. When this is

not done one of two reasons is the cause, either the non-possession of Mr. Maxwell's license, or pressure in the secretary's office, owing to the newness of the change. To recover any sums deducted for absence, the teacher files an application directly with the secretary, instead of through the principal. The committee on teachers having the approval of the principal and the chairman, or a majority of the local committee, looks into the record for three preceding terms, apart from the one affected by the rebate, especially in reference to absence, and usually gives a favorable answer. This money comes back in a supplementary check in monthly order, instead of annually, as of old.—EMILE, in the *Brooklyn Eagle.*

GERMAN PROHIBITION OF CANNED MEATS AND SAUSAGES.

Consul-General RICHARD GUENTHER, Frankfort, reports, January 14, 1901:

The prohibition of the importation of canned meats and sausages has now gone into effect. Paragraph 12, section 1, of the meat-inspection law contains the direct prohibition of canned meats and sausages. According to section 2, other kinds of prepared meats shall be admitted, if it is shown that there is no danger to human health in the manner of their production and preparation.

In its annual report, the Chamber of Commerce of Hamburg says:

"According to the first proviso, the staple kinds of prepared foreign meats hitherto imported should be admitted without question, for experience has shown them to be harmless. The proviso furthermore contains a striking condemnation of the prohibition of canned meats.

"Not only the public, but also the different branches of the Government, especially the Imperial German Navy, have used these articles for many years without having found any cause for such restrictions. Only recently large purchases of American salt pork have been made for supplying the troops in East Africa. The premium of 1,000 marks ($238) offered for the last two years for proof of trichinosis resulting from eating American pork has as yet not been claimed. Suspicions with reference to American lard have been proven by reliable experts to emanate from gross ignorance; and if, in spite of such testimony, they are raised over and over again, it simply furnishes proof that the opposition has little choice of weapons for its warfare."

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

TAXATION FOR PROTECTION OF HUMAN LIFE.

Writings on political economy and discussions on that subject are largely taken up in the mode, policy and effect of taxation for protection of products, industries and commerce as a whole for a nation. No allusion is made to taxation for the protection of human life. The revenues that are derived from taxation are applied, in part, in such manner as to aid human life and happiness in the aggregate, in some sanitary and police regulations, but the effect of the mode of levying a tax imposed for the purpose of the protection of the life of and family of a taxpayer is not duly considered. It is left principally to the laws of each State to do that for an individual, under certain constitutional restrictions, even so far as the raising and expenditure of money for local public purposes. The policy of State laws in such matters is almost untrammeled by State constitutions, and State legislation is responsible for proper laws for the protection and promotion of human life in modes of raising revenue and the disposition of it for State and local purposes. It is there that the most important social problems must be solved by appropriate laws, and it is there that we must strive to recognize a science of taxation, with a systematic foundation, that will lead to a new order of society by moulding the thought and action in such manner as to aim to definitely solve some of the social problems that are constantly brought up, from time to time, in thickly populated cities. The centre of man is self, and social regulations must appeal to personal feelings and motives or they will set loosely and be liable to be held up to ridicule or be deemed tyrannical and fail of purpose.

The growth and extent of sanitary laws and regulations, and their necessity and the recognition of their beneficial effects on mortality and health and consequent happiness of man, do not now need argument in their behalf, only to assert that they are evidence that other laws are needed and can be applied in such manner as to still further conserve human life and happiness.

In ascertaining laws necessary for the welfare and happiness of mankind we must take into view the external conditions that sur-

*Continued from page 332.

round them—their environment. This leads us to consider that to conserve the most precious parts of a community—human life—motherhood and infancy should be made secure and motherly and parental attention adequately aided in delicacy to the needs and requirements of infant and family life. Parental care and anxiety for the supply of the necessaries common to life with which the mother and family must be provided by the fruits of industry of the head of the household, generally with economy, either voluntary or compulsory, always with self-denial that no other conditions could entail or enforce. Necessaries for the family must be provided by some person by some means. Protection from the elements of the external world require habitation, fuel and clothing. The house (real estate) becomes of primary importance; it is in constant use and cannot be dispensed with. Its steady and economical supply is of the first importance. To have it heavily taxed is a great detriment to all those that are in need of its use, protection and comforts. Parental happiness depends more upon the home than on anything else. Nothing does so much to promote the energy of true life in man as this. Hunger, thirst and inadequate clothing can be and often are willingly borne for the purpose of this ever-present influence of home for the family. In this man and legislation have co-operated to its protection and security to some extent, recognizing the direction of the greatest happiness principle as a surer basis for society by being founded on social instincts, thus proving that humanity exists for itself and must protect itself and that legislation must co-operate with man to produce the greatest amount of happiness, which moulds the thought and action of a well-ordered community.

A direct tax upon real estate (land and the structures upon it) not only increases the cost of its use (rent) and enters into the cost of all that it produces, but it indirectly enters into the cost, and thus affects the more difficult supply of food and clothing in all its range and diversity of subjects and conditions.

Revenue for public purposes in every State and city is derived, in part, from direct tax upon land and the structures upon it. This cannot be dispensed with now for local purposes any more than it ever could, notwithstanding the large values of capital and movable property and other sources from which revenue can be and is obtained.

The National Government has not resorted to a direct tax on land for nearly one hundred years. Some States obtain all revenue for State purposes without any direct tax on land. But for

local and municipal purposes a land tax is always resorted to, more or less, in some form.

The earth (real estate) is the source and supply of all the needs and wants of man, and all personal property must emanate therefrom, in whatever form man may apply to it and whatever purpose he may design it for the use or caprice of himself or his fellow men.

In cities it is now more difficult and costly, per capita, to provide a habitation for a family than it is to get food and clothing for them. The most important factor to consider in striving to aid and improve social conditions in cities is to cheapen rents. To do this is to have the tax on real estate as little as possible, consistent with the economic welfare of the community. The large revenue that cities are now required to have to carry on their government has greatly increased the tax rate, much more than has the value of the property made liable to taxation. While the tax on personal property has been steadily declining, by reason of statutory enactments, the tax on real estate and the costly structures upon it has been steadily increasing, until now it has become oppressive and some remedy is earnestly sought for obtaining revenue in a more satisfactory manner.

For any city to have all, or a very large portion, of its maintenance put upon real estate alone, and thus increase rents, would seem to be one of the most inconsistent and inhuman acts of government that can be conceived of and a detriment to the growth of a city.

It would be class legislation of the most primitive kind. While it may be proper and expedient in agricultural communities of little expenditures, as we have before seen, it would be detrimental and unjust in cities where there are costly structures on land and larger expenses to maintain a more humane civilization, and where complex social conditions create new orders of society that arise largely from active instincts that exist there. Such an appeal to popular feeling is with little judgment of the result on the welfare of the community or State at large or the effect that the regulations that must exist under such conditions as an exclusive single tax on real estate and the structures upon it would entail. The tax upon land alone, without taking into consideration the structures upon it, would mean confiscation of all unimproved land, and then not enough revenue would be obtained to carry on the government.

High taxes on places for business purposes increase the price of rent that must be obtained to yield a fair profit for the use of the

capital invested in the ownership of the real estate and its improvements and the cost of carrying it. The tenant takes into consideration the amount of rent he pays in regulating the price of the goods or the profits and income he must make in his business. The consumers of these goods and products must pay this advance, and thus all the supplies of the necessaries and comforts and luxuries of life cost more than they would if the rent was less and the taxes on the real estate less. The toiler, when employed, gets more because he has to pay high rent. This may all go on very well so long as the landowner has a tenant that can afford to pay good rent, which he can do so long as his business is good and his profits large, which are dependent on the constant employment and high wages of those that demand and consume his products. But when all this is at a standstill all along the line, and the tenant cannot pay and is ejected, it all falls on the landowner, who must not only lose his profit on the investment of the cost of his property while vacant, but must continue to pay the high taxes the same as when he could get a fair rent for the property, and he must make it up on the next tenant. When the toiler is out of employment his wages cease, but the natural demands of his position continue, and he and those dependent upon his wages must suffer, including all those that his patronage would otherwise aid. The toiler has no capital to fall back on and must wait for better and more favorable conditions; he and his family must suffer want and privation, more or less, in consequence of the high price of the necessaries of life. The high rent must be paid in advance or his family and himself must be turned into the street when his little savings are gone. They would last longer if rent and food were cheaper and the age and conditions of the members of his family were more favorable to such circumstances as surround him.

All his family suffer in degrees dependent upon their conditions in connection with the head of the family.

Whatever may be the generally more favorable conditions of a large part of the inhabitants in a large city, there will always be found a large number who are unfortunate under circumstances that are beyond their control, and thus subject to all the misery that want and sickness can inflict on mankind. To make the burdens of such lighter and to help all those that are not only particularly unfortunate but those that are in prosperity, and to encourage them in their course of industry and progress and to cheerfully hope to realize a higher and better life in their struggles and aspirations, the cost of the common necessaries of life should be placed

within an easy and economic supply, where self-denial could be practised in strict economy without detriment to health and danger of life. To do this the habitation must be used, and the cost of the use of it, the rent, is of primary importance to all other necessaries, and there is the article that should bear less cost. That high rentals greatly deter the starting of new enterprises and the extension of local business, and the supply of help that cannot be readily found at a price that will encourage fair competition, and thus increase the supply as well as the demand for the usual necessaries and conveniences of city life, no one will deny.

The risks of a demand and supply of tenants that can and will pay for the investments in the improvements of real estate in cities are also a great detriment. The hope that the burdens that real estate now bears in cities will be made less, and that homes and not tenement houses will be available for those that desire them, will be a great advance in the progress of solving many of the social problems of the day for the further advancement of humanity in its individual independence, freedom and intelligence.

Of what avail to the happiness of man and the welfare of the community are all the free schools, libraries, hospitals, dispensaries, parks, and police protection, and sanitary regulations, and cheap food and clothing to a man that has no habitation or sleeping place for himself and family, and has no means to obtain one when the night comes on in a large city?

High rents often mean this to many a family, in more or less degree. They shun the city or leave it in despair while they yet have means to do so. A single tax on real estate alone, sufficient to maintain a large city, means from thirty to fifty per cent. of the net rent received for the use of the property going for taxes to yield a clear average profit of five per cent. per year to the owner for his investment. The tenant must pay this in advance to have the use of the premises. The landowner and builder will not and cannot afford to supply him and take less profit for the investment. Reducing the tax rate on real estate one-half in such cases and obtaining the other half or more in some other modes, will mean more appropriate and better dwelling places, more tenants, more business, more happiness, less rents and a better contented community, and will be a protection to human life and early youth and encourage family relations and promote the general welfare of the State and nation, and better conditions will be seen to prevail among us.

There is a natural tendency for people to flow into large cities and to remain there, if possible. This is founded on economic con-

ditions, because there exist the greatest subdivisions of the greatest variety of employments, where not only the most skilled can find occupation, but also the simplest and weakest bodies find something that they can do, and some work is more likely to be continuous than in smaller places. *(To be continued.)*

WHY BOYS DON'T GO TO SEA.

At the recent "International Seamen's Union Convention" in Boston, a report was adopted descriptive of the lack of inducements to boys to become seamen, in part as follows:

"No one disputes the fact that American boys do not seek the sea for a living, nor is it disputed that in the early history of this country it was otherwise. Some improvements have been granted, and for these the seamen are thankful, but they are not sufficient to cause the American, with his ideas of individual liberty and comparatively high standard of living, to become a seaman. Nor will any one acquainted with the facts of the seaman's life blame him.

"While the sailor who simply refuses to fulfill a contract of labor may, in a foreign port, in the foreign trade, be pursued, recaptured, and put on board the vessel which he left, like a runaway slave or an escaped criminal, the liberty-loving American boy will not choose the seafaring profession as a means of earning a living. While part of the wages 'signed for' must be paid to some 'crimp' under the name of 'advance wages' in order to obtain employment, or for the same reason he must consent to sign away his right to receive some part of wages in 'ports of call,' no one has any right to expect that any large number of high-spirited lads will go to sea and remain there.

"We note with joy that this view is gaining strength in this country as well as in European countries, and feel sure that Congress, when it shall find time to consider this important subject, will pass Bill H. R. 9,963 at an early date. We note the purpose to abolish the naval militia—composed of landsmen—and the desire to establish a naval reserve composed exclusively of seamen, and express the hope that it may find favor in Congress.

"Regarding the Subsidy bill, we desire to say that, in our opinion, this bill, as now reported, will fail in its purpose, if such purpose be 'to furnish seamen for Government use when necessary.' If this be a part of the object of this bill and such be the desire of Congress, then such amendments must be added as will induce the American boy to go to sea and remain there."

AMERICAN JAM, ETC., IN ENGLAND.

By JAMES BOYLE, U. S. Consul, Liverpool.

Reports from this consulate have several times during the past three or four years drawn attention to the great opening in England for American fruits, preserves, jams, pickles, condiments, and other table delicacies. The English people are the largest consumers of jam in the world. It is probably the fact that jam and not beef is now the national dish of the Britisher—or, at any rate, jam (including marmalade) runs bacon a close second. As the United States is now supplying a large proportion of the beef and bacon consumed in England, she can also, by proper methods, capture a great share of the trade in jam, preserves, etc., in this country. In order to secure, and particularly to hold the trade, however, it should always be kept in mind that the English are very discriminating buyers. They want a good article, and are prepared to pay a good price; and, as a rule, they are indifferent as to the place of origin. It is well known that nowhere in the United States can better American beef and bacon be bought than can be bought in England, and many American visitors declare that better American beef can be had in London and Liverpool than can generally be obtained in New York or Chicago. However this may be, it is a fact that shippers of American beef to this market understand that they must send over the very best in order to compete with the home and colonial product.

But to return to jams, preserves, etc. The English trade in these lines is increasing all the time. A great revolution is going on in the English table, more especially among the middle and working classes. What were a few years ago expensive delicacies, found only on the tables of the well-to-do, are now to a great extent articles of daily consumption by the masses. Except so far as the very poor are concerned, it may be said that bacon (generally with eggs) and jam or marmalade are on every English breakfast table; and an almost universal "sweet" (the English for "dessert") at lunch and dinner is a "compote," stew or tart, of which the chief ingredient is preserved fruit. In this connection, the following article from the *London Daily Telegraph* of January 12, 1901, is of interest and contains a number of suggestions valuable to American shippers in the lines indicated:

"JAM BRICKS—CONFECTIONERY ENTERPRISE IN AMERICA.

"Commercial journals in the United States are just now directing much attention to the vast development that is taking place in California and elsewhere in the manipulation of fruit pulps and jam, and it seems that something like a revolution in the enormous industry is by no means an impossibility in the near future. Something of the same kind has been foreshadowed in this country, and observant visitors to the great exhibitions of grocery and confectionery at the Agricultural Hall last autumn did not fail to note the prominence assigned to partially boiled-down fruits, with a view to their ultimate conversion into preserves, seeing in the idea a possible valuable resource to the British market gardener, now so often handicapped by glutted markets and low prices. The aim, however, of the American experts is to go yet farther and to work their pulps with the due proportions of sugar into practically jam bricks. One need not be very old to remember how housekeepers of the recent past used to pride themselves upon the stiffness and firmness of their damson or cherry 'cheeses,' which could be stamped out in fanciful forms with a pastry cutter, and were not even sticky to the touch. Those were due to careful boiling to exactly the right point, after processes of putting the fruit through fine sieves and bringing the sugar to candy. This, upon a wholesale scale, is what American jam boilers want to accomplish, and many experiments in that direction are now being carried out.

"Indeed, so far has it gone that Messrs. Henderson & Simpson, of Thames Street, who are wholesale dealers in American produce, a few months ago submitted to the War Office a number of specimens of these 'jam bricks' for the use of the troops in South Africa, pointing out the valuable saving that would be effected in freight and transport could oiled tissue paper take the place of the present tins, glass jars, or crockery pots. The samples received the fullest consideration, as the condensed soups supplied through the same house had won special commendation from Earl Roberts, but were not adopted, which, it may be said, did not cause any surprise to those concerned, who are themselves the first to admit that there are still obstacles to be overcome before a perfect solidified preserve is available. That these will be surmounted within the next few months no one has the slightest doubt, and meantime the samples in this country are attracting much interest throughout the grocery trade. The problems have been overcome with respect to mince-meat, long regarded as impossible of compression, and the traveler, the soldier, the sportsman, or any other to whom

small bulk is a consideration, can now purchase a hard, heavy cube of about 2 or 3 inches in size, from which a few fragments chipped off and moistened with sherry, brandy and water, or milk, will prove an excellent presentment of the favorite Christmas delicacy.

"Incidental to these inquiries, many interesting facts were to be gleaned as to the growing part that fruit pulps from abroad are playing in the manufacture of English jams. When a single order from one noted London firm alone amounts to 28 tons of apricot pulp from California, it will convey some idea of the magnitude the system is attaining. Plums, pineapples, quinces, apples, and peaches are also largely utilized in this way, and the latest triumph, as it is claimed, in this direction is that of being able to send into this country strawberry pulp. Small wonder, indeed, that the British grower has cause for complaint that 'the demand is not what it was' for his products. With the treatment of this material on such a scale, it is not astonishing that those who know the wonderful climatic advantages of California for drying should advocate the carrying of pulp preparation a step farther and presenting the jam itself without the costly encumbrance of old-fashioned packing. As far as dried fruits are concerned, it may be noted that South Australia is the most formidable rival in the English market of the United States, and that, in the opinion of an exceedingly competent expert, if the Australian colonies and New Zealand would pay the same attention to packing and attractive appearance as is done in America, they would easily hold their own in this department. At the same time, it is disquieting to learn that American sweets are coming into this country at the present time in sufficient quantities to cause considerable uneasiness to our own manufacturers of these dainties. Last month's consignment of 'gum pastilles' to be vended at a very cheap rate to one house alone was 2,000 barrels, containing 3 cwts. each, and caramels, fondants, and the marshmallow sweets, which can be molded into such quaint shapes to appeal to the childish eye, are delivered at our wharf sides to the extent of 8,000 to 10,000 pounds a month. Did American manufacturers show rather more elasticity in their trade methods toward the conservative Britisher, the volume of trade in this direction would be even greater than it is."

LIVERPOOL, January 14, 1901.

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Detriments of Alcohol.—Pertinent to the interest which now occupies public attention with regard to the use of alcohol and the facilities for obtaining it abroad, as well as in the United States, we extract an analysis of its effects on the human system, as given ("Journal d'Hygiene," January, 1901), by M. Bienfait, a distinguished pathologist of Liege, at the recent Anti-alcohol Congress in Paris, in response to a series of questions, as follows:

"Alcohol, is it a digestive agent? No; for its ingestion produces a passing excitement, exceedingly injurious to the muscles of the stomach because alcohol, after having irritated the wall of the stomach anesthetizes it, draws the blood to the skin and prevents the full action of the gastric glands.

"Alcohol, is it an appetizing agent? No; because it produces a degree of excitement in the stomach causing a painful sensation which may be called a false hunger.

"Alcohol, is it an element of nutrition? No; for it does not contain any of the elementary principles included under the term nutrition; and the caloric elements it is said to contain do not give warmth, nor are they a cause of increased muscular strength.

"Alcohol, is it a producer of warmth? No; for it determines an afflux of blood to the surface and a general increase of coldness in the system.

"Alcohol, is it a stimulant? No; not in any case, for it perverts and then depresses physical activity as it weakens and depraves intellectual vigor.

"Alcohol, is it a preventive of contagion? No; on the contrary its depressing influence on the system predisposes it to receive and develop the elements of contagion.

"Alcohol, is it beneficial to children? No; for it is more deleterious, more poisonous for them than for adults.

"There is no use whatever for alcohol except as a medicine, and then it should never be given except on the advice of a physician." Its use in the arts is something quite different.

Gastric Changes by Alcohol. MM. Theoari and A. Babes, of Bucharest, have presented to the Société de Biologie a careful study of the "Modifications Histochimiques de la Muqueuse

Gastrique par l'Alcool." ("Progrès Médical," March 2, 1901). In alcoholic subjects the experiments of Hayem have shown a hyperpension and hyperpapepsia.

Histologically alcohol can produce chronic inflammation of the gastric mucous membrane, even true gastritis; but the fine structure of the gastric cells in these conditions has never been fully investigated.*

The experiment by the authors on the dog show that at first alcohol produces a marked excitement in the secretion of the gastric mucous glands. Chemically, the experiments, continued during several months, produced a diminution of the chemical organic chlorine; histologically, the principal cells—with or without local filaments—did not produce granulations of pepsinogenic character. These relations show still further the relations between the organic chlorine and the pepsinogenic function and justify the importance attributed to the confidence in the dosing of organic chlorine in the diagnosis of affections of the stomach. An extreme histological type is indicated by a very great alteration of the mucous of the stomach and characterized by interstitial gastritis and the disappearance of the pavement cells. The principal cellules present the epithelial type.

Offsprings of Drunken Mothers.—In Saunders' Year-Book on Medicine and Surgery, a report by Sullivan, quoted by Drs. Hirst and Dorland, who investigated the history of the offspring of chronic drunkards (women in the Liverpool prison), after carefully eliminating the cases in which the alcoholism appeared to be complicated by other degenerative factors, shows that the death-rate among the infants of the inebriate mothers was nearly two and a half times that among the infants of sober women of the same stock. In the alcoholic family there is a decrease of vitality in the successive children; for instance, in one family the three first-born children were healthy, the fourth was of defective intelligence, the fifth was an epileptic idiot, the sixth was dead-born, and the seventh pregnancy ended in an abortion. There was a sensibly higher death-rate in cases in which the maternal inebriety was developed at an early period. Sober paternity had little influence, and in face of maternal drunkenness might be

*The "Progrès Médical" states that this careful histological study was commenced by A. H. Pilliet in his work "Action locale des essences sur la muqueuse gastrique, Soc. de Biologie," 14 Nov., 1893, P. 895, et continuée dans, Etude de l'estomac dans un cas d'empoisonnement aigu par l'absinthe, Soc. de Biol., 28 Mai, 1898.—Gastrites toxiques experimentales. Soc. anat., 1893; et Etude experimentale sur ces gastrites toxiques, Soc. Med., 10 Fev., 1895. Sclerose et atrophie des glandes gastriques, Soc. Med., 1889, P. 293 et 514.

almost neglected as far as the vitality of the offspring is concerned. Conception in drunkenness had a distinct influence, as was shown by the fact that of the seven cases in which the condition was noted, in six the children died in convulsions in the first months of life, and in the seventh case the infant was still-born. On the other hand, imprisonment during pregnancy, if the imprisonment began early in the pregnancy and lasted nearly all the time, seemed to diminish the evil effects; but the difficulties in drawing conclusions regarding this point were great. Of the children of drunken mothers that survived beyond their infancy, 4.1 per cent. (a very high percentage) became epileptic (9 out of 219). These results show the danger to the community of the female drunkard.

MUSCULAR SERUM.—M. Richet presented to the Académie des Sciences ("Gazette Hebdomadaire," March 3, 1901), an interesting note resuming some of the properties of muscular serum. This serum, which seems to be an efficacious remedy for tuberculosis, is a very active agent and even poisonous in certain doses.

M. C. Richet proposes the name muscular serum, or myoserum, for the juice of meat obtained by compression, which is, according to the author, the only part of fresh, raw meat that contains the curative properties that can properly be applied to experimental tuberculosis in the dog. It is a reddish liquid, its reaction is amphotheric or very feebly alkaline, coagulable with heat or nitric acid. Besides the mineral constituents, it contains about 50 grammes of albuminoid substances to the kilogramme, among which hemoglobine may be mentioned. Injected subcutaneously or into the veins, in doses of 5 cubic centigrammes for every kilogramme of the weight of the animal, this muscular serum produces a notable lowering of the arterial pressure; the animal is seized with vomiting and a bloody diarrheal discharge from the bowels, and death follows in twenty-four or forty-eight hours, sometimes in less, and dies in a state of coma.

The autopsy shows an intense congestion of the intestines and of the liver; the coagulability of the blood is not changed; the kidneys show no alteration. Three cubic centigrammes for each kilogramme of the weight of the animal is generally well borne and it is the limit of tolerance.

Fresh beef gives, under a pressure of twenty-five kilogrammes to the square centimetre, about 33 P. C. of myoserum; frozen meat will yield even 50 P. C.

DIGESTION AND THE URINE.—M. Bardet presented a report to the Société de Thérapeutique ("Progrès Médical," March 9, 1901), on his investigation of the "Influence de la digestion sur la reaction des urines." A detailed study of the acidimetric curve of the urine was continued for forty-eight hours in a hyperchlorhydric patient. The habitual acidimetric range of the urine of this patient was, in the morning, fasting, below the normal, or 3 instead of 4.5. After a mixed repast it fell to the neutral point without any clinical symptom. But if an attack of fermentation supervenes on the hyperchlorhydric digestion the proportion of the acidimetric element is found to be materially increased, and this is a frequent cause of error in diagnosis. On the other hand if the urine be studied independent of alimentation, but in the course of a distinct attack of hyperchlorhydria, we also find marked hyperacidity. In other words, if the hyperchlorhydria can be taken to guard against cause of error arising from abnormal fermentation, the gastric excitement arising from an attack or even due to the regular fermentation of the stomach, is marked by a decided lowering of the regular acidimetric condition.

THE PROPHYLAXIS OF CANCER.—Behla ("Deutsche Medizinal-Zeitung," No. 45, 1900) notes that the outlook has not changed since Bardleben said, twenty-five years ago, that prophylaxis against cancer could not be found. However, Behla thinks the following points worthy of attention: From various researches about the supposed cause of cancer, suspicion has been thrown upon the water in stagnant pools, ponds, and ditches which are surrounded by wood or bushes on their banks; and this may, with great probability, be regarded as the bearer of the cancer germ. In such cases where endemic cancer is present it is desirable that such water should not be used for drinking, unless it be boiled, nor should it be used unless boiled for household purposes—washing tables, eating and drinking-vessels—or to water the garden and field beds. Cancer may also be derived from vegetables, so that salads and raw vegetables must not be washed with such water. To the use of salad, raw vegetables, fruit, berries, a greater hygienic attention must be paid. The baskets, sacks, etc., in which fruit is stored are often kept in damp, unclean rooms, cellars, outhouses, etc., where mold is prevalent. There is still a blot on the hygiene of foods, for while with water, meat and milk the best sanitary measures prevail, the gate is wide open to infection from raw vegetables and fruit.

Behla thinks heredity undoubtedly plays an important rôle in the etiology of carcinoma. He also blames marriage between near relations. Infection may be conveyed by the secretions, discharges, blood, etc., from cancer by means of fingers, instruments, pipes, drinking vessels, etc.

The author bases his conviction on frequent outbreaks of cancer which cannot be accidental; and he considers that the cancer germ resides in the house or in its near neighborhood, and that it will be eventually shown to be a plant fungus, and that then cancer will become a preventable disease.

THERAPEUTIC VALUE OF PEROXIDE OF HYDROGEN.—Marcel Rifaux states ("Lyons Médical," November 4, 1900) that peroxide of hydrogen was discovered by Thérard in 1818. This substance is a colorless, odorless liquid, having a piquant taste. It can be mixed with water in all proportions. Its oxygenizing power is considerable, for it gives up its oxygen with the greatest ease, which is the basis of its real antiseptic character. It is also a hæmostatic. Clinically it is of the greatest service in all fetid, suppurating wounds. Old chronic otorrhœa, for example, with fetid suppuration is rapidly deodorized by its use. It has been employed with some success for disinfecting the uterine and vaginal cavities. In epistaxis it is used as a hæmostatic. The writer concludes from the study of peroxide of hydrogen that it merits an important place in therapeutics, as it is non-toxic, inodorous, a powerful deodorizer, an antiseptic of value, and a hæmostatic of the first order.

GOAT MILK ("Journ. de Méd. de Paris," March 25, 1900) has the advantage over cow's milk of being free from tubercle bacilli and can be taken quite fresh. Contrary to general opinion, the taste is not disagreeable if the animals are properly selected and properly kept, being considered of a more delicate flavor than cow's milk. The quantity of fats, casein, and salt varies greatly in the different varieties of goat. For infants and dyspeptics the weaker milk may be chosen, while the stronger answers better for debilitated subjects.

PROFESSOR KOCH ON MALARIA.—Koch ("British Medical Journal"), in his final report to the German Foreign Office of his researches on malaria in Italy, Java and New Guinea, says he has reached the conclusion that though the developed parasite, the

cause of the fever, was introduced into the human body by gnat bites, yet the permanent home of the parasite germ was in the human body itself. The germs were passed by the gnat from one person to another and were developed in the body of the gnat during the passage. In combating the disease it is therefore necessary to begin with the persons affected and not with the gnat. Children are especially liable to the disease. At a village called Stephansort, New Guinea, where 137 inhabitants out of 700 were affected by the fever, they had all been cured by the use of quinine. The new-born infants were made the subject of special attention, and it was found possible to keep them in good health, although it had hitherto been impossible to rear children at Stephansort. He regards the proposal to exterminate the gnats as impracticable. Mosquito nets were useful, but not absolutely to be relied upon. All attempts to secure immunity from malarial fever by inoculation had hitherto failed. Preventive treatment by quinine had great value, but was not always practicable.

REMEDY AGAINST MOSQUITOES.

E. H. PLUMACHER, U. S. Consul at Maracaibo, reports (November 30th) that a simple remedy against mosquitoes has been employed in several places in South America and is equally well adapted to the temperate zone. It consists in planting the castor-oil plants (*Ricinus communis*), or "palma christi," around the house and premises.

In cold and temperate climates the castor-oil plant grows to a height of 4 or 5 feet; in these countries it becomes a tall tree and is perennial. It seems that the smell of the plant is disagreeable to mosquitoes and other insects, and it is an acknowledged fact that where these plants grow few mosquitoes will be found.

My personal experience bears this out. My residence is surrounded by plantain and banana trees, and I have been much troubled in the past by the great number of mosquitoes which gathered between the leaves. Following the example of old settlers in the country, I planted the castor seeds, which grew up in profusion, and there are now no mosquitoes to be found among the plaintain and banana trees, although I keep the ground well irrigated. By keeping branches and the seeds of the plant in rooms the mosquitoes are driven away from the latter.

There are several varieties of the castor-oil plant. In this country there are two, one with brown nuts and the other white in color, with a kernel tasting like the fresh almond.

EMERGENCY HOSPITAL AT THE PAN-AMERICAN.

HOW EXPOSITION VISITORS WILL BE TAKEN CARE OF WHEN THEY FALL ILL.

A very pretty hospital building stands near the west end of the Mall. Floor area rather than elevation is a prominent feature in the construction of this important adjunct to the Exposition. Utility, first, last and all the time is the prime consideration in this design, though it is by no means a case of utility unadorned. In conformity with the general Exposition plan the free Spanish renaissance has been treated, in this instance, with a strong leaning toward the old mission interpretation.

Having a frontage of 90 feet on the Mall; the main wing has a depth of 38 feet with a height of but one story, except in the centre, where it assumes the form of a square tower with a rounded top. This tower attains to the pretentious height of two stories surmounted with two flagstaffs. One staff supports the Exposition flag and from the other waves the well-known Red Cross banner, the only universal international emblem that is recognized and reverenced in all countries.

A rear wing, one story high, runs back from the centre portion a distance of 56 feet, with a width of 32 feet. This form of construction lends itself readily to this picturesque reminder of the early struggles of our first missionaries.

Color, here as everywhere throughout the grounds, adds its mantle of beauty to the odd, and, in many cases, obsolete methods of construction, penetrating, rather than clothing the building in the warm changing tints of the sunset. A low, wandering, adobe mission house, covered with heavy red tiling, its weather stains retouched by the gorgeous rays of the departing sun, may be readily imagined while looking at this rehabilitation of the past.

Any antequated illusion that may be conveyed by the outside appearance of this building is, however, at once dispelled by a visit to the interior.

Modern arrangements that are both convenient and sanitary mark every feature. Approved medical and surgical appliances have been carefully selected in regard especially for their adaptability to emergency work and the exigencies that are likely to arise.

The main hospital entrance is from the Mall, opening directly into a handsome rotunda decorated with tropical plants and suitable hangings of pictures, drapery, etc.

The main office is situated at the farther left-hand corner of this rotunda, where it is carefully tucked away under the staircase, forming an irregular alcove. It contains telephone and electrical annunciator, and messenger call service, with other modern and necessary appurtenances. As this is lighted from above and encircled by a round gallery opening through the upper story, the effect is very pleasant and agreeable. The first floor front contains, in the extreme western wing, two male wards, with seven cots each, a bath-room, physicians' office, a morgue and a linen chest. The eastern wing contains a woman's ward, large enough to hold a dozen cots, with direct communication to the woman's bath-room. This wing also contains an office for the superintendent of nurses, private physician's office, a linen closet and other conveniences.

The upper story is intended for the use of the resident physician and the necessary attendants. It is fitted up with four pleasant, comfortable bed-rooms and a bath-room. The rear wing, extending back from the main entrance, contains the operating room, sterilizing department and instrument cases. Immediately across the hall is the emergency bath-room and patients' waiting-room. Still farther down the corridor is located the kitchen, pantry and dining-room, which is intended for the use of patients only, as the staff have their culinary department in the service building situated but a few yards distant. In the extreme southern end of

this wing is the storage room for the electrical ambulances; this room also contains a station for recharging the batteries; electricity for this purpose being brought from an electric circuit provided for the electric launches on the Grand Canal. In addition to the two electrical ambulances, a steam or gasoline motor ambulance will be provided to be ready in case of a possible failure of the electrical current. The building is provided with natural gas for heating purposes and for cooking when necessary for the patients.

Water, gas and electricity are carried to every part of the hospital in the most approved manner.

This building is plastered throughout and rendered sanitary and germ-proof so far as possible, in all respects. The staff in attendance are uniformed to grade according to universal custom.

In the matter of equipment and appliances, everything is of the newest and best. A new litter attracts considerable attention; it is carefully balanced and so arranged that one attendant can operate it easily and noiselessly, as it runs on two wheels about 20 inches in diameter, which are fitted with large, inflated rubber tires. Sterilizing apparatus, with an apartment for instruments and another for towels and linen, is another necessary arrangement.

Roswell Park, M. D., is the Director; Vertner Kenerson, M. D., Deputy-Director, and Dr. Alexander Allen is the resident physician, a staff which will at once inspire confidence in all who are acquainted with these gentlemen or their work. The efficiency of this department is an illustration of the manner in which the Exposition is designed and executed in all its departments. Everything has been carefully arranged according to a great, comprehensive plan, the details of which have been worked out in every instance with careful, conscientious precision.

In regard to the importance of this adjunct to the Exposition it may be said that up to the first of March five hundred and four cases have been treated on the grounds, only one of which proved fatal. These include all forms of sickness and accidents to workmen employed upon the construction work. In this connection it is well to note that the number of cases treated at the Omaha Exposition was about three thousand, while the history of the hospital at the World's Fair in Chicago gives a total of 11,602.

M. B.

EDITOR'S TABLE.

SANITARIAN, MAY, 1901.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

PREVENTIVE MEDICINE IN THE STATE LEGISLATURE.

Two months ago we took occasion to call attention to the "Deluge of Doctors" in the State legislature—the kind of "doctors" there presenting and in charge of bills ostensibly for the protection and promotion of the public health. His excellency, the Governor himself, opened the way in his message for a bill doing away with the State Board of Health for economical reasons—an economy of persons only. For the board of nine members, as it had existed from the beginning, twenty-one years ago, served without any compensation other than actual expenses while on duty, which, as given in the latest annual report at hand, that of 1898, amounted to $1,293.27. In lieu of this in the Governor's bill as formulated, and that quickly became a law, was the State Department of Health with one commissioner with a salary of $3,500. A very small salary, certainly, considering the duties and responsibilities of the office, but nearly treble the expenses of the board. As for the rest: All the duties, powers and expenses provided and allowable under the law governing the pre-existing board have been devolved upon the one commissioner of the State Department of Health as now constituted. The commissioner is authorized to make and to fix the salaries of all appointees he may deem necessary in the administration of the department. The salaries of the board as summed up for the year 1898 amounted to $17,500, including that of the secretary, $4,500 by special provision.

No one at all familiar with the scope of the sanitary work under the purview of the department, e. g., the water supplies, sewerage, soil drainage, abatement of nuisances, etc., requiring engineering skill, and questions of law always more or less likely to be raised in the progress of such works; expert sanitary knowledge in seeking for the source of infectious diseases and the prompt application of effective measures for their eradication; the constant need of sanitary supervision of State institutions, etc.—no one with an adequate appreciation of such questions can con-

template them without regard to expenses involved; and to stint such works or any one of them is the abiding risk of an epidemic disease at manifold greater expense, besides the cost of human life. That Commissioner Lewis will be able to grasp or employ the needful assistance and conduct the work as efficiently as and more economically than he and his eight associates of the whilom State board were able to, is an open question.

The particularly notable feature of the other "doctors' " bills referred to in our March issue has been the contest with the quacks.

The proposed amendment of an existing law regulating the practice of medicine was approved by a committee of the New York County Medical Association. Its purpose was to ostracize quackery. But it was so redundant in its specifications as to excite ridicule. Nevertheless it was subsequently modified and generally approved of by the medical profession. Unfortunately, however, it was committed to untrustworthy hands. Mr. Bell (no relation of ours, thank goodness!), the particular "doctor" to whom the bill was committed, discovered himself to be a representative of the quacks. At the "hearings" he invited the quacks of all shades of color, which were overwhelmingly in the ascendant, and supported by Mark Twain. Thus fortified, Mr. Bell conferred with his constituents and others of his cult, amended his bill to suit them, with the result, described by the correspondent of the New York "Times," as follows:

"Albany, April 3.—Mr. Bell called up the bill in the Assembly to-day at 2 o'clock. At the same time he offered three amendments which he thought would put the bill in such shape that it would receive the indorsement of the legislature. The first of these permitted only licensed physicians to use or prescribe medicines or drugs; the second prohibited any but a licensed physician from treating contagious or infectious diseases, or performing operative surgery, and the third amendment recognized the practice of osteopathy under certain restrictions. In offering the amendments Mr. Bell made the following statement:

" 'At the first public hearing on this bill before the Committee on Public Health in the Assembly chamber, I stated that I had received the bill from gentlemen who represented the New York County Medical Society, and who, I considered, were entitled to my absolute confidence. When the bill was printed and commented upon by the press, I realized it was a dragnet put out by the licensed physicians of the State, and gave them a mortgage upon

the whole medical practice in the State of New York. Then it was that I started in to liberalize the bill. It does not make one single feather's weight difference with me whether the bill is passed or not.'

"Mr. Bell had no sooner stopped talking than half a dozen members were on their feet appealing for recognition. Five members were recognized successively to offer amendmnts. The amendments were all of a character to make the bill impossible. Dr. Henry was then recognized to reply to Mr. Bell.

"Dr. Henry said that the medical profession would not stand for Mr. Bell's amendments. The bill as amended by Mr. Bell, Dr. Henry said, practically recognized the practice of osteopathy. The regular physicians were strenuously opposed to recognition of this alleged new school.

"'At the hearing upon this bill,' continued Dr. Henry, 'the Christian Scientists have had a great deal to say about the efficacy of prayer. I am a believer in the efficacy of prayer, but I am inclined to doubt that the Christian Scientists have the faith in prayer which they profess to have when I reflect upon the fact that ever since this bill came up they have been most persistent in lobbying against it. They have told us of the wonderful cures they could effect by absent treatment, but for reasons best known to themselves they have not tried much of that kind of treatment on the legislature. Their praying has all been done in the Assembly lobby and in the Assembly chamber.'

"When a vote was taken to recommit the bill it was carried by so large a majority that there was no call for a division. There is no prospect that the bill will be heard from again at this session.

"Dr. Henry, who is the Chairman of the Committee on Public Health, said he did not regard the campaign made by the physicians as wasted. The public had been greatly enlightened by it, he said, and as a result of this, legislation against the quacks would be possible at the next session."

The other absurd bill, "to amend the Public Health law to regulate the type in the publication of books, newspapers or serial literature," to which reference was made in our March issue, fortunately, to the credit of common sense and for the public welfare, also failed of passage.

STONY WOLDE SANATORIUM.

The Stony Wolde Sanatorium Building Fund Committee is prospering beyond its best hopes. It is now three months since

its organization, and at a meeting at the house of Mrs. Henry C. Potter, 10 Washington Square, New York, recently it was announced that the treasurer had on hand $27,063.81 toward the proposed building, so much needed for the tuberculosis patients of New York.

The Washington Square Auxiliary, under whose auspices the meeting was held, announced at the beginning of the meeting that there was $844.50 in its own treasury, and before the guests had left the house this was increased to $1,100. The practical work cannot be begun until $100,000 is obtained, and this must be on hand before the 1st of June if arrangements are made this summer to receive any of the many patients who are constantly applying for assistance.

It is a fortunate fact that the proportion of pulmonary invalids who cannot with impunity resume work after a few months of open air treatment is small. This has been shown very clearly in the experiences of a colossal German health insurance company, the Hanseatic, which finds it to its advantage to maintain a number of rural sanitaria, some of them at great expense.

At the recent Congress of Hygiene in Paris, Dr. Phicque proposed to establish an additional tax of a penny upon alcohol for the benefit of the tuberculous. The tax is fully justifiable, Dr. Phicque thinks, on the ground that alcoholism is the principal cause of consumption.

THE ADULTERATING OF MILK.

Albany, April 3.—There are now pending before the courts in the various cities of the State a dozen or more cases brought to test the constitutionality of the provision of last year's law prohibiting the use of preservatives in milk. Among these cases is one against John S. Bieseker of New York City. This case was recently tried before the Appellate Division, and the law against the use of preservatives was declared unconstitutional. An appeal in this case has now been taken by the State to the Court of Appeals.

Bieseker was represented by Herbert R. Limburger, who argued that if the law was sustained a man could not mix a milk punch without being guilty of a misdemeanor, since alcohol was a preservative of milk. Mr. Limburger's contentions being sustained by the court, other users of preservatives in milk, against

whom actions have been brought in the name of the State, have engaged him to represent them.

Mr. Limburger was here to-day for the purpose of having proceedings in the other cases similar to the Bieseker case suspended until a decision can be had from the Court of Appeals in that case. If the Court of Appeals sustains the finding of the lower court in the Bieseker case, all the other cases will fall to the ground. If, on the other hand, the Court of Appeals decides that the law is constitutional, it will be useless for other users of preservatives in milk to make any further defense.

The Bieseker case is one of much interest to the New York County Medical Society. Last fall this society took up the question of the use of preservatives in milk. The leading milk dealers of New York City were called into conference with the physicians. They all testified to the use of preservatives by the smaller dealers. Some of the preservatives used were chemically analyzed and were pronounced injurious to health. The opinion was advanced by some of the physicians who had given special attention to the subject that the infants of New York City were being poisoned by preserved milk, and that many cases of typhoid fever among the young and adults could be attributed to that source.

If the Court of Appeals sustains the decision of the Appellate Division in the Bieseker case, there probably cannot be new legislation to guard against the preservative evil until next year, which means that the poisoning of milk used by the poor in the big cities will continue during the coming summer.

THE CONTEST WITH THE SPITTERS.

The energy recently displayed by the Department of Health of the City of New York in arresting and punishing the spitters in public places has had an encouraging effect on efforts to suppress the nuisance elsewhere. But in some places these defilers of decency and claimants for the right to disseminate disease-producing filth, fight for "their right." But, unfortunately, there are still some health authorities, both State and local, and some newspapers, who show their subserviency to such "right" by denying without effort the practicability of enforcing regulations for preventing the foul practice.

"The only way" (Chicago "Record" of April 10) "an anti-spitting ordinance can be justified is as a measure of public health, to prevent the dissemination of disease microbes in the sputa. Such

legislation has been enforced in Boston, and the orders of the Board of Health of Chicago against expectorating in the street cars and places of public assemblage have had a deterrent effect. But the vile habit of expectorating in public places seems to go on unchecked.

"The great American habit of promiscuous expectoration has at last come in conflict with a minion of the law. The clash ended disastrously for the blue-coated guardian of civic manners. His head was broken, two of his ribs were fractured and his body was bruised and disfigured by numerous kicks. The American spitter fell furiously upon him for attempting to interfere with the most precious prerogative of a free citizen in a free republic. All this happened in the streets of the city of St. Paul. A police patrolman attempted to enforce the ordinance prohibiting spitting on the sidewalks. Five young men were engaged in flooding the sidewalk with copious expectorations. Of course they knew nothing of the ordinance and resented the invasion of what they deemed their personal rights with all the muscular strength at their command.

"All of which shows the folly of attempting to improve men's manners by city ordinances. Legislation never yet made a gentleman out of a boor. When the lawmakers invade the domain of personal decorum they are treading upon uncertain ground."

Manners and decorum, indeed! Pray when and where, outside of a hog-pen, were manners and decorum ever measured by defilement?

DOCTORS TO INVESTIGATE NEW YORK CITY'S VICE CONDITIONS.—Seven members of the New York County Medical Society have been appointed a committee to investigate the evils of prostitution in the tenement houses from a physician's point of view. The committee consists of Dr. P. A. Morrow, Dr. S. A. Knopf, Dr. H. D. Chapin, Dr. C. W. Allen, Dr. L. D. Buckley, Dr. Ludwig Weiss, and, ex-officio, Dr. George B. Fowler, president of the society. Dr. Morrow will act as chairman. After its work is under way, it will communicate with the Committee of Fifteen, but its investigation will be wholly along lines which concern the physician as a practitioner.

THE INEBRIATES' HOME OF NEW YORK CITY.

A bill was introduced into the New York Senate on April 5th incorporating the Inebriates' Home of New York City. Dr.

William T. Jenkins, A. Campbell White, George R. Bidwell, Delancy Carter, Isaac H. Love and Frank J. Cuthbert are named as trustees. The home is to be established under the membership corporations law. It is to have the power to receive and retain inebriates under rules provided by the State Board of Charities. Committing magistrates are authorized to commit habitual drunkards to the home for terms varying from six months to a year, according to previous condition and reputation. New York City is to provide for the maintenance of the home. The avowed purpose of the proposed institution is to treat the indigent poor for alcoholism, instead of sending them to prison.

DR. ROBERTSON ELMIRA SUPERINTENDENT.

Dr. F. W. Robertson, acting General Superintendent of the New York State Reformatory, has been appointed permanent General Superintendent by the Board of Managers. Dr. Robertson was, previous to his coming to the reformatory, a physician in Bellevue Hospital, New York. He came to the reformatory as resident physician, succeeding Dr. H. D. Way of Elmira. He has been acting as General Superintendent since Superintendent Brockway's retirement from active duties on July 31.

HOUSE-DRAIN OBSTRUCTIONS.

EDITOR SANITARIAN:

In making sanitary examinations of plumbing, I have found many strange objects in the pipes and fixtures. Yesterday on opening one of the fresh air inlets of one of our large summer cottages a dead red-headed wood-pecker was found. As the pipes were entirely new last year this bird must have entered the top of the soil pipe and fallen to the bottom. He then crawled up the fresh air inlet and but for the cowl on it would have escaped into the open air. Thus he starved to death in full sight of the open sunlight. W. H. L., San. Eng.

Newport, R. I., April 16, 1901.

VALUE OF VACCINATION.

Anti-Vaccinationists Afflicted by the Delusion that they alone are Wise. Harlequin, March 28.

"The Times-Democrat gives to anti-vaccinationists on occasions, as it would to Mormons, or any others whom we believe to be misguided in their views, an opportunity of presenting their case

to the public through our columns."—"The Times-Democrat."

"And the comparison is even more generous than the generous democracy of your columns, to which you refer. The Mormon can make out a good case. The 'anti-vaccinationist' cannot. He is the man who demands a demonstration that two and two are four; that matter exists; that the earth is round; that fire burns; that cold freezes; that life ends; that progress is not stationary; that physical rules govern as much of the universe as we know anything about. He is the unhealthy doubter, afflicted by the delusion that he alone is wise; that all other men are ignoramuses; that opinion and knowledge are identical; that personal belief can take the place of universal fact. The Mormon and the eunuch are good logicians in comparison with the 'anti-vaccinationists.' The former have reasons for their faiths! The latter none."—"Times-Democrat."

SANITATION IN ITALY.

Health legislation of an entirely new kind is contemplated in Italy. There the responsibility of mosquitoes for malaria is quite generally regarded as a demonstrated fact, and a bill drawn in recognition of it is already under serious consideration. It provides for the official declaration of affected zones, and for the gratuitous distribution in such regions of quinine to the poor by the municipal authorities until the extermination of the anopheles mosquitoes can be accomplished. Government departments or Government contractors responsible for the execution of public works which give rise to malarial fevers must supply quinine gratuitously, and if any person dies or becomes permanently disabled from malaria while employed on such works, the same indemnity must be paid as that established for persons under the Employers' Liability Act. Another article enjoins precautions against the entrance of insects to homes within the malarial zone, inhabited by persons employed in the public service and on public works, from the beginning of June to the end of December, and offers rewards not exceeding $200 to proprietors and manufacturers who do the like for the houses of their employees and of the peasants. The bill also empowers the Government to take whatever further measures may seem necessary for the carrying out of the provisions of the law, after such measures have been approved by the Superior Council of Sanitation and by the Council of State. The enactment of a law like this would be a most interesting and important experiment. In many parts of Italy

malaria in its severest forms has long existed, and naturally the scientists of the country, and its statesmen as well, take a deep interest in suggestions for banishing the disease.

VEGETARIANS AND SNAKES.

According to the Government statistics no less than 24,621 persons died of snake bites in India last year. To balance this, 94,548 snakes were killed by human agency. Upon this showing, the "Journal of the American Medical Association" thinks that it can hardly be explained except upon the heathen Hindoo's reverence for animal life even in its most objectionable forms. For a snake is one of the easiest of animals to kill, a venomous one no more difficult than any other. In this country hundreds of thousands are annually slain, at the least estimate, and no bounty given; and poisonous varieties are practically exterminated in most thickly settled districts. But India is the paradise of vegetarians and anti-vivisectionists, though a paradise with altogether too much of the presence of the serpent. With all allowance for special difficulties that may exist, the less than one hundred thousand snakes killed in the year, considering the number of persons killed by them, is a most extraordinary fact, inexplicable except for their estimate of the sacredness of animal life—even of snakes.

DRINKERS MAY HAVE TO GET A LICENSE.

Little Rock, Ark., April 15.—The State Senate to-day passed a bill making it unlawful for any person to drink any intoxicating liquor as a beverage unless he or she shall have first obtained a license as a dram drinker. The license is fixed at $5 a year.

To PREVENT MOSQUITOES FROM BITING, the Charlotte "Medical Journal" thinks nothing equals the topical application of kerosene. Suspending a small flannel rag, wet with kerosene, at the open window or door, will keep them out of the room. Rub some over the hands and arms, and lightly through the hair, and it will compel a roomful of mosquitoes to stand back.

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

NEW YORK.—Bulletin of State Department of Health for February reports: Population, 7,268,000; total death, 11,021; death rate, 19.5; deaths under five years, 2,482; percentage of deaths under five years to total deaths, 22.6; from zymotic diseases, per 1,000 from all causes, 28.0; from cerebro-spinal meningitis, 41;

typhoid fever, 114; malarial diseases, 11; smallpox, 35; scarlet fever, 126; measles, 74; erysipelas, 54; whooping-cough, 52; croup and diphtheria, 240; diarrhœal diseases, 200; acute respiratory diseases, 2,291; consumption, 1,130; puerperal diseases, 114; digestive system (not diarrhœal), 614; urinary system, 832; circulatory system, 1,095; nervous system, 1,135; cancer, 371; accidents and violence, 403; old age, 603; unclassified, 1,486.

City of New York, 3,536,517: Total deaths, 5,489; death rate, 20.2; deaths under five years, 1,562; from cerebro-spinal meningitis, 12; typhoid fever, 36; malarial diseases, 8; smallpox, 32; scarlet fever, 103; measles, 25; erysipelas, 29; whooping-cough, 19; croup and diphtheria, 166; diarrhœal diseases, 149; acute respiratory diseases, 1,060; consumption, 702; cancer, 181.

Borough of Manhattan, 1,873,562: Total deaths, 2,916; death rate, 20.3; deaths under five years, 882; from cerebro-spinal meningitis, 9; typhoid fever, 18; malarial diseases, 3; smallpox, 4; scarlet fever, 48; measles, 3; whooping-cough, 12; croup and diphtheria, 90; diarrhœal diseases, 90; acute respiratory diseases, 537; consumption, 349; cancer, 98. Smallpox, during the five weeks ending April 13, 41.

Borough of the Bronx, 222,124: Total deaths, 371; death rate, 22.0; deaths under five years, 109; from typhoid fever, 1; malarial diseases, 2; smallpox, 28; scarlet fever, 13; measles, 5; erysipelas, 1; croup and diphtheria, 9; diarrhœal diseases, 7; acute respiratory diseases, 52; consumption, 91; cancer, 16.

Borough of Brooklyn, 1,209,064: Total deaths, 1,871; death rate, 20.0; deaths under five years, 499; from cerebro-spinal meningitis, 3; typhoid fever, 16; malarial diseases, 3; scarlet fever, 40; measles, 16; erysipelas, 8; whooping-cough, 6; croup and diphtheria, 52; acute respiratory diseases, 352; consumption, 219; cancer, 52.

Borough of Queens, 162,834: Total deaths, 226; death rate, 17.8; deaths under five years, 54; from typhoid fever, 1; scarlet fever, 2; erysipelas, 2; croup and diphtheria, 4; acute respiratory diseases, 56; consumption, 29; cancer, 9.

Borough of Richmond, 68,933: Total deaths, 105; death rate, 20.0; deaths under five years, 18; from typhoid fever, 1; measles, 1; whooping-cough, 1; croup and diphtheria, 3; acute respiratory diseases, 30; consumption, 14; cancer, 7.

Albany, 94,151: Total deaths, 157; death rate, 21.5; deaths under five years, 34; from typhoid fever, 3; croup and diphtheria, 4; acute respiratory diseases, 38; consumption, 12; cancer, 7.

Syracuse, 108,374: Total deaths, 141; death rate, 17.0; deaths under five years, 26; from typhoid fever, 1; scarlet fever, 1; erysipelas, 1; whooping-cough, 1; croup and diphtheria, 2; acute respiratory diseases, 25; consumption, 14; cancer, 7.

Buffalo, 352,387: Total deaths, 394; death rate, 14.5; deaths under five years, 131; from cerebro-spinal meningitis, 6; typhoid fever, 7; scarlet fever, 4; erysipelas, 3; whooping-cough, 7; croup and diphtheria, 8; diarrhœal diseases, 7; acute respiratory diseases, 94; consumption, 36; cancer, 15.

Rochester, 162,608: Total deaths, 222; death rate, 17.5; deaths under five years, 46; from cerebro-spinal meningitis, 4; measles, 5; croup and diphtheria, 2; diarrhœal diseases, 2; acute respiratory diseases, 56; consumption, 16; cancer, 14.

Binghamton, 39,647. Report for the year 1900: Deaths, 792; under five years, 159; death rate, 19.97; deaths from pulmonary consumption, 62; diphtheria (and croup), 56; typhoid fever, 21.

Niagara Falls, 19,457. Report for the year 1900: Deaths, 308; from pulmonary consumption, 25; typhoid fever, 24; diphtheria, 6; death rate, 15.83. Infectious and contagious diseases tabulated for the year: Typhoid fever, 227; measles, 77; scarlet fever, 73; diphtheria, 52.

The State Commissioner of Health, Dr. Daniel Lewis, has reorganized the appointments of his office as follows: Dr. F. C. Curtis of Albany, medical expert; F. D. Beagle of Oneida county, registrar of vital statistics, and the following clerks: Thos. A. Stuart of Albany, chief; George G. Champlin of Alfred, Allegany county; Ambrose Kelly of Troy, A. K. Cole of Peekskill, Theodore S. Vancott of New York, Charles E. Thompson of Albany and Ida H. Lindsay of Bath.

ARKANSAS.—The State Board of Health has been reorganized, with Dr. George M. D. Cantrell, Little Rock, president, and Dr. Robert B. Christian, Little Rock, secretary.

CALIFORNIA.—San Francisco.—No official report. Though the report in detail of the commission appointed by the Secretary of the Treasury—Prof. Simon Flexner of the University of Pennsylvania, Prof. F. G. Novy of the University of Michigan and Prof. L. S. Barker of the University of Chicago—has not yet been published, enough has been to fully verify the reports of Dr. Kinyoun, against which the Governor and his subservient ap-

pointees have so strenuously contended, and to convince the Governor of the error of his ways. As per "Public Health Reports," March 29, 1901: "Plague has been reported in San Francisco officially in the public health reports since March 6, 1900, thirty-two cases, all fatal, having been reported and published in previous numbers of the public health reports, and the facts were reported in the annual report to Congress of the Secretary of the Treasury, dated December 4, 1900.

"While the correctness of the diagnosis has never been doubted by the bureau or the department, it was deemed advisable to summon an independent board of experts, composed as above mentioned. On completion of their labors the results of their investigations, as outlined above, were immediately communicated by them to the Governor of California and the mayor and representatives of the business interests of San Francisco, and full copies of the report subsequently furnished. Coincidentally with the receipt of the report of the commission at the bureau, a committee representing the business interests of San Francisco and the mayor, and the Governor of California, arrived in Washington, and a conference was held between this committee and the Secretary of the Treasury and surgeon-general of the marine hospital service, in which conference all the facts were discussed and a written agreement made for harmonious action in suppressive measures under the advice of Surgeon J. H. White, who is on the ground."

San Francisco, April 5: In accordance with the directions of Dr. White of the Federal service, the work of cleansing has been begun at the extreme northwest corner of the Chinese quarter and the progress will be toward the south and east, with a force of 22 inspectors, in charge of Dr. W. M. Lawlor. They were detailed to visit the habitation of every resident and acquaint him with the instructions for putting the property in a sanitary condition. As a concession to the Chinese it was decided not to have the work done by the employes of the Health Board, but to allow the Chinese to take charge of the cleansing of their own property. Thus the rights of the dwellers will not be invaded, provided they show a willingness to comply with the instructions.

The work will consist of a thorough inspection of all dwellings, the sweeping of streets and the closing up of underground habitations. Governor Gage has permitted the authorities to draw upon the State fund for the means to carry on the work.

Los Angeles, 102,479.—Report for March: Deaths, 168; under five years, 11; death rate, 18.89; deaths from specific infectious diseases, 23; diseases of the respiratory system, 49; phthisis, 37; tuberculosis, 9; pneumonitis, 10. "Of the 37 deaths from pulmonary consumption, 23 had lived here less than ten years."

COLORADO.—Denver, 136,000.—Report for January: Deaths, 311; under five years, 9; deaths from phthisis, 72—56 contracted elsewhere; influenza, 18; scarlet fever, 11; death rate, 27.48—excluding phthisis contracted elsewhere, 20.12.

"We still maintain a quarantine on the Chinese," said Dr. Tyler of the Health Board ("Post," March 14), "but we have no further steps in contemplation just now. But the fact is that the danger has grown, through neglect of the California authorities, until it is very grave. There were seven deaths known to be due to plague last month, and probably many more which were ascribed to other causes. The serious feature of the matter is that the deaths were not all in San Francisco, but were scattered among smaller towns along the coast."

CONNECTICUT.—The State Board of Health Bulletin reports for February: Total deaths, in 167 towns with an aggregate population of 907,700, was 1,381; death rates, in the small towns, 19.3; large towns, 17.8; State, 18.2; deaths under five years, 289; from cerebro-spinal meningitis, 2; typhoid fever, 9; malarial fever, 1; scarlet fever, 12; measles, 6; whooping-cough, 3; erysipelas, 2; croup and diphtheria, 15; diarrhœal diseases, 9; acute respiratory diseases, 278; consumption, 116; diseases of nervous system, 159; heart diseases, 119; accident and violence, 25; all other causes, 595.

A grave epidemic of typhoid fever prevails in New Haven. At latest report, at the time of this writing, April 15, there were 350 cases recorded. It is attributed to the usual source—polluted drinking water.

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports for two weeks ending March 16, 1901: Total deaths, 261; death rate, 24.35; deaths under five years, 49; from typhoid fever, 7; croup and diphtheria, 4; influenza, 12; acute respiratory diseases, 46; consumption, 47; cancer, 5.

ILLINOIS.—Dr. James A. Egan, Secretary of the State Board of Health, has been appointed a member of the State Board of Health,

to succeed Dr. Peter H. Wessel, Moline. In his communication to the Senate, the Governor says: "This appointment is made because I deem it best that the Secretary of the State Board of Health should be a member of the board."

For the second time in the history of the United States a jury trial is scheduled ("Chicago-American") to take place at an early date before the Supreme Court in Washington. This unusual course of legal procedure will be taken to settle the case of the State of Missouri versus the Board of Trustees of the Sanitary District of Chicago, and the announcement that the Justices of the Supreme Court will temporarily invest authority in a plain, ordinary jury of humble citizens will surely be received with amazement by many eminent legal authorities, who probably do not believe that a trial by jury before the Supreme Court is a possibility.

When the case was reached on the Supreme Court docket a few days ago the court passed upon the question of jurisdiction and decided that the question was one between two States which could properly be brought before the court. The decision then reached was that if Missouri pushes her case and insists on a trial, the jury will be impaneled and the question of whether the canal is a nuisance and a danger to health will be decided.

This jury, however, will simply decide a question of fact, after which the justices will pass upon the legal aspects of the case. The jury will be impaneled by the clerk of the court, but there seems to be some doubt as to whether citizens of the entire United States, regardless of residence, or whether citizens of the two interested States shall be summoned on the jury list.

Chicago, 1,758,025. Report for February: Total deaths, 1,933; under five years, 584; death rate, 14.52; deaths from consumption, 223; from other tubercular diseases, 35; pneumonia, 320; diphtheria, 44; influenza, 28; whooping-cough, 21; typhoid fever, 16; cancer, 68; sarcoma, 10.

INDIANA.—The report of the State Board of Health for March shows: Total number of deaths 3,272, rate 15.3. Corresponding month of 1900—deaths 3,217, rate 15.0. Deaths from important ages: Under one year, 566; one to five years, inclusive, 230; sixty-five years and over, 847. Deaths from important causes and rates per annum per 100,000 were: Pulmonary tuberculosis 373, rate 174.9; typhoid fever 44, rate 20.6; diphtheria 29, rate 13.5; scarlet fever 24, rate 11.2; measles 43, rate 20.1; whooping-cough 26, rate

12.1; pneumonia 603, rate 232.7; diarrhœal diseases 15, rate 9.0; cerebro-spinal meningitis 39, rate 18.2; influenza 174, rate 81.5; cancer 81, rate 37.9; violence 114, rate 53.4.

Deaths from smallpox, 5; urban deaths 1,164, rate 16.2; rural deaths 2,108, rate 14.9.

Morbidity: There were 472 cases of smallpox reported from the following counties: Marion, 22; Steuben, 1; Pike, 4; Fulton, 12; Tipton, 6; Fanderburg, 1; Lake, 12; Posey, 6; Lawrence, 101; Vermillion, 16; Dekalb, 5; Howard, 8; Perry, 1; Dearborn, 4; Wabash, 4; Ohio, 46; Switzerland, 220; Wayne, 1; Noble, 2. The smallpox cases are generally mild, but not a few are more or less severe. In all new localities invaded, the uninformed physicians fail to recognize the disease, but, what is worse, usually cling to their erroneous diagnosis and so make it hard to apply preventive measures. The diseases which decreased in area of prevalence during March were: Bronchitis, influenza, pneumonia, tonsilitis, diphtheria, typhoid fever, inflammation of bowels. Those increasing in area of prevalence were: Rheumatism, measles, intermittent fever, diarrhœal troubles, whooping-cough.

IOWA.—Davenport, 35,254. Report for February: Total deaths, 38; death rate, 12.9; deaths under five years, 9; from typhoid fever, 2; acute respiratory diseases, 9; consumption, 6.

KANSAS.—The Secretary of the State Board of Health reports *smallpox* in the State for March in fifty-one localities; an aggregate of 1,612 cases, with 8 deaths.

KENTUCKY.—At a meeting of Drs. J. M. Mathews, J. M. McCormack and Wm. Bailey, comprising the Executive Committee of the Kentucky State Board of Health, April 4, it was decided to establish a modified quarantine against Tennessee in view of the prevalence of smallpox in many of the border counties of Kentucky, and which is said to have been caused by people from Tennessee.

LOUISIANA.—New Orleans, 300,000—90,000 colored. Report for February: Total deaths, 524—201 colored; death rates, white, 18.4; colored, 26.8; total, 20.9; deaths under five years, 98—44 colored; from typhoid fever, 9; malarial diseases, 6; smallpox, 13; scarlet fever, 6; diphtheria, 4; influenza, 31; acute respiratory diseases, 68; consumption, 59; cancer, 13.

New Orleans is the only city in the Union thus far heard from, which has adopted the international system of nomenclature of causes of death in its reports.

MARYLAND.—Baltimore, 541,000. Report for February: Total deaths, 968—221 colored; death rate, 21.05; deaths under five years, 244; from typhoid fever, 4; scarlet fever, 1; whooping-cough, 5; croup and diphtheria, 20; influenza, 53; acute respiratory diseases, 253; consumption, 91; cancer, 37.

MICHIGAN.—The Secretary of the State Board of Health reports for March, compared with the average for March in the ten years, 1891-1900: Scarlet fever, typhoid fever, and smallpox were more than usually prevalent, and consumption, intermittent fever, diphtheria, remittent fever, measles, whooping-cough and cerebro-spinal meningitis were less than usually prevalent.

Cerebro-spinal meningitis was reported at 5 places; *whooping-cough* at 21 places; *measles* at 49 places; *diphtheria* at 58 places; *typhoid* fever at 75 places; *smallpox* at 116 places; *scarlet fever* at 178 places and *consumption* at 191 places. *Cerebro-spinal meningitis* was reported at 1 place less; *whooping-cough* at the same number of places; *measles* at 11 places more; *diphtheria* at 4 places less; *typhoid fever at* 20 places less; *smallpox* at 45 places more; *scarlet fever* at 3 places less; and *consumption* at 6 places more, in the month of March, 1901, when compared with the preceding month.

Smallpox, April 4: Since the first of January, outbreaks of smallpox in 84 localities in Michigan have been caused to cease; and in 63, or 75 per cent., of those outbreaks *the disease was restricted to the one household where the first case occurred.* Notwithstanding this splendid record of effective work by the health service, the disease continues to spread, because in the other outbreaks where the disease was not restricted to the first household, it was first called "Cuban itch," "cedar itch," chickenpox or acne, and not reported to the health officer so that restrictive measures could be taken. Because of such lack of proper reports, smallpox still continues to spread. It is now present in 100 places in Michigan, and is steadily increasing.

The total number of deaths reported to the Secretary of State for the month of March was 3,488, corresponding to a death rate of 17.2 per thousand population; 343 over the number for the pre-

ceding month, and 355 over the number returned for March, 1900.

There were 673 deaths of infants under one year of age, 203 of children aged one to four years, and 1,024 deaths of persons aged sixty-five years and over.

Important causes of deaths were as follows: Pulmonary tuberculosis, 217; other forms of tuberculosis, 34; typhoid fever, 45; diphtheria and croup, 35; scarlet fever, 44; measles, 7; whooping-cough, 20; pneumonia, 489; influenza, 320; cancer, 112; accidents and violence, 126. There were 3 deaths from smallpox during the month.

Report of Vital Statistics for 1898.—This is the first report under the law of 1897 for the "registration of deaths in Michigan, and requiring certificates of death." The statistics collected by the "census method" of collecting vital statistics—at the time of taking the annual assessment—pursued from 1867 to 1897, are pronounced by the editor of this report, Cressy L. Wilbur, M.D., Chief of the Division of Vital Statistics, Department of State, to be grossly unreliable. An essential part of the operation of the present law for the registration of deaths is the publication of a monthly bulletin, of which this report is, for the most part, a compilation: Population (estimated on ratio of increase since 1890), 2,399,800; total number of deaths (1898), 29,474; deaths per 1,000 population, 12.4; marriages, 20,138; marriages per 1,000 population, 16.9; divorces, 1,808; births, 43,462; births per 1,000 population, 18.2; deaths under one year (exclusive of 1,300 still births), 5.496; under five years, 7.548; deaths from epidemic disease, 2,015; typhoid fever, 499; measles, 131; whooping-cough, 282; diphtheria, 345; croup, 111; influenza, 455; tuberculosis, 2,826; cancer, 1,321.

MINNESOTA.—Minneapolis, 240,000. Report for February: Total deaths, 192; death rate, 8.98; deaths under five years, 53; from cerebro-spinal meningitis, 3; typhoid fever, 4; scarlet fever, 1; croup and diphtheria, 7; acute respiratory diseases, 35; consumption, 20; cancer, 11.

St. Paul, 165,000. Report for February: Total deaths, 122; death rate, 8.86; deaths under five years, 29; from typhoid fever, 2; scarlet fever, 2; croup and diphtheria, 1; acute respiratory diseases, 21; consumption, 13; cancer, 4.

Smallpox.—The little towns near Rochester, Fulton county, are

excited over the 40 cases of smallpox in that city. Argos, Akron and other towns talked of quarantining against Rochester, but were advised not to do so by the State Board of Health. The Secretary of the State Board of Health says the Rochester cases are mild and that they are being properly cared for.

MISSOURI.—St. Louis, 575,200. Report for February: Total deaths, 789; death rate, 16.45; deaths under five years, 218; from cerebro-spinal meningitis, 1; typhoid fever, 14; scarlet fever, 2; croup and diphtheria, 35; acute respiratory diseases, 146; consumption, 75; cancer, 17.

St. Louis, April 12.—Recent developments in Chicago in connection with the operation of the drainage canal have caused City Chemist Techman and other Health Department officials to believe there is increasing danger to St. Louis people who drink Mississippi water.

Statistics prepared by Assistant Health Commissioner Francis show that since the opening of the drainage canal the number of typhoid fever cases in St. Louis had been tripled. During the summer, Dr. Techman fears, the increase will be even larger.

He has found that the Chicago Sanitary Board proposes to decrease the flow of lake water through the canal without any decrease in the amount of sewage that flows into it. He has found also that the decrease is to be a very substantial one.

City Chemist Techman says: "The action of the Secretary of War in ordering the flow in the Chicago River reduced to 200,000 cubic feet a minute is a sanitary crime. If the United States Government will not protect St. Louis we shall have to expend $1,000,000 in building a tunnel to bring our city water by gravity flow from the Mississippi River to the water-works. Because of the large percentage of bacteria in the canal the public health of the city of St. Louis has already suffered greatly, the increase of typhoid alone being three times the normal average of the five years prior to the opening of the canal. With the decreased flow the increase must necessarily be much larger."

MONTANA, Butte (Mont. "Miner"), April 3.—The first meeting of the State Board of Health was held in Helena, Montana, April 1. The members made themselves acquainted with the context of the law. The idea of the new law contemplates that each county shall have its own local board of health, consisting of the county commissioners and one physician. The county boards

must look after the sanitary conditions in their respective counties, especially with reference to epidemics. They must report to the Secretary of the State Board.

The personnel of the board is as follows: Governor Jos. K. Toole and Attorney-General Donovan, ex-officio; Dr. Wm. Treacy of Helena, chairman; Dr. Belcher of Townsend, Dr. Hugo Loebinger of Butte, and Mr. Robertson, a civil engineer of Bozeman.

The board elected Dr. F. A. Longway of Great Falls, as permanent secretary, at a salary of $100 per month. The board will meet every three months in Helena.

NEW HAMPSHIRE.—State Board of Health reports for the two years ending November 1, 1900: "New Hampshire has now probably the most accurate system of registration of vital statistics of any State in the Union. The State Board of Health presents three reports biennially—Report of the State Board of Health, Report of the Commissioners of Lunacy, and Report of the Registration of Births, Marriages, Divorces and Deaths. It also publishes the Sanitary Bulletin, issued quarterly." The leading subjects discussed and special reports and papers in this volume are: Protection of Water Supplies, Restriction and Prevention of Scarlet Fever, Measles, Preparation and Transportation of the Dead, Examination of Plumbers and Regulating the Practice of Plumbing and House Drainage, An Outbreak of Smallpox, Report on State Hygiene, The Septic Tank and Bacteria Bed, Observations on the Causes of Death in New Hampshire, Duties that Local Boards of Health Owe to the People in Regard to Schoolhouse Hygiene and Sanitation, Farm Sanitation, Diphtheria Bacilli, and Membranous Anginas.

Under observations on the causes of death, etc., by the secretary: Total number of deaths in 1898, 6,743; death rate per 1,000 of population (404,322), 16.68, the lowest during the past sixteen years. In 1899 there were 7,045 deaths, 17.27 per 1,000 (407,938). A diagram is presented illustrating a summary of deaths from twenty most prominent causes for the two years. For 1899: Pneumonia, 753; heart disease, 685; apoplexy and paralysis, 627; consumption, 582; old age, 371; cholera infantum, 364; cancer, 279; accident and negligence, 247; cephalitis, 219; debility, infantile, 196; bronchitis, 185; influenza, 170; Bright's disease, 151; brain disease, 123; atrophy and debility, 107; convulsions, 103; typhoid fever, 92; diarrhœa and dysentery, 76; diphtheria, 55; croup, 47.

NEW JERSEY.—Newark, 250,000. Report for four weeks ending March 30, 1901: Total deaths, 363; death rate, 18.8; deaths under five years, 96; from typhoid fever, 1; diphtheria, 8; acute respiratory diseases, 59; consumption, 40; cancer, 6.

Hudson County (Jersey City and vicinity), 386,048. Report for February: Total deaths, 622—196 under five years; annual death rate, 21.3; deaths from all zymotic diseases, 58; diphtheria (and croup), 20; phthisis, 75; bronchitis, 27; pneumonia, 109; grippe, 16.

Paterson is contending with merited trouble. Three years ago the Passaic Valley Protection Association, composed of the riparian land owners, obtained an injunction from the Court of Chancery compelling the city of Paterson to stop emptying its sewage into the river, on the ground that the water below the city was unfit for use and that the stench from the river made the locality unhealthy. The Court of Errors and Appeals set the injunction aside on the ground that it would be impossible for so large a city as Paterson to change the disposition of its sewage so suddenly. The court suggested, however, that the riparian land owners could compel the city to make compensation.

The idea pleased the farmers and small property owners below the city and they started a movement to recover damages. Leonard and Jacob Vanderbeck, ice dealers, did not wait until all the others were ready. They brought suit for $100,000 for damage to their ice business. The cases were tried last week in the Bergen County Circuit Court and the Vanderbecks got a verdict for $5,000 in each case.

The other riparian owners have retained Richard V. Lindabury to bring a suit in the Court of Chancery. There are several hundred of these riparian owners and they put their aggregate claims at $10,000,000. If those farmers should recover from the city they will certainly move away from the alleged filthy Passaic, by the side of which they have lived for generations without ever once dreaming of such things as damages and unhealthfulness.

NORTH CAROLINA.—The State Board of Health Bulletin reports for February: Total deaths, in a population aggregating 129,084, in 45 towns, 228—109 colored; death rates, white, 17.9; colored, 26.4; total, 21.2; deaths under five years, 40—22 colored; from measles, 5; pneumonia, 50; consumption, 31; brain diseases, 12; heart diseases, 21; neurotic diseases, 7; diarrhœal diseases, 3; accidents, 7; all other causes, 92.

PENNSYLVANIA.—Philadelphia, 1,293,697. Report for four weeks ending March 30, 1901: Total deaths, 2,040; deaths under five years, 521; from typhoid fever, 17; scarlet fever, 27; croup and diphtheria, 51; acute respiratory diseases, 384; consumption, 304; cancer, 51.

Pittsburg, 332,000. Report for five weeks ending March 30, 1901: Total deaths, 619; death rate, 19.5; deaths under five years, 234; from typhoid fever, 46; smallpox, 1; scarlet fever, 5; croup and diphtheria, 10; acute respiratory diseases, 115; consumption, 36; cancer, 10.

TEXAS.—It is not generally known (New York "Evening Post") that Texas has isolated its consumptive convicts, thus keeping in the front rank of modern ideas regarding the treatment of this malady. Not only this, but these ailing convicts receive treatment practically similar to that followed in sanitaria for consumptives. Their diet is of a highly nourishing character, and includes stimulants. Cleanliness in quarters and the observance of sanitary precautions are imperative. When able to leave their beds, the men are required to be in the open air, and they sleep in a spacious stockade, where each enjoys as much breathing space as he would in a forest camp. No one is required to work beyond his strength, and employment is entirely in market-gardening. Yet this isolated convict farm has returned to the State in two years a net profit of about $2,500. Thus far the results of this mode of living and treatment have been of the most gratifying character.

UTAH.—Salt Lake City, 70,000. Report for February: Total deaths, 54; death rate, 9.25; deaths under five years, 13; from diphtheria, 3; small pox, 1; acute respiratory diseases, 16; consumption, 2.

WASHINGTON.—Seattle, 90,000. Report for February: Total deaths, 73; death rate, 9.73; deaths under five years, 10; from typhoid fever, 1; scarlet fever, 1; diphtheria, 1; pneumonia, 14; consumption, 6.

WISCONSIN.—Milwaukee, 295,000. Report for February: Total deaths, 317; death rate, 13.97; deaths under five years, 108; from typhoid fever, 3; scarlet fever, 2; diphtheria, 5; whooping-cough, 5; consumption, 26; acute respiratory diseases, 53; cancer, 17.

HAVANA.—The Chief Sanitary Officer reports for March the

general death rate 26.28, it being lower than for the corresponding month since 1889, though considerably higher than for the preceding month. The increase has been chiefly due to diarrhœal discases of children and to pulmonary diseases entirely among the Cubans; altogether, 444 deaths against 305 in the month of February.

Of yellow fever there were four cases, with one death. The only two years since 1889 with so small a number of deaths from this cause in March, were 1892 and 1899, 1 death in each. In 1900, during March, there were 11 cases, with 4 deaths. Previous to 1899 there was no record of cases kept. Since March 23, the city has been entirely free from this disease, and for the first time since June, 1899.

About Mosquitoes.—"I think," he says, "our present freedom from fever is in part due to the systematic and extensive way in which we have been killing the mosquitoes for the last month. I have the greatest hopes of destroying the foci as they appear by systematically killing the mosquitoes over a large area around each focus as it occurs.

"I am inclined to think that we have been free from fever for a longer time than has ever occurred in Havana before. Our records show longer periods in which no fever was reported in the early part of the year '99, but at that time physicians had not learned to recognize the milder types of yellow fever, and were much less careful about reporting them, so that a case of yellow fever, which is now promptly recognized and reported, would then have been passed over.

"Our condition with regard to smallpox is equally satisfactory, and while this disease is occurring in every part of the United States, we in Havana have not had a single case since August, 1900. These two diseases, yellow fever and smallpox, have been looked upon as being endemic in Havana; I think the present state of affairs particularly worthy of remark.

"I also call attention to the large amount of sanitary work being done, as shown by the report. If any work ordered has not been commenced on re-inspection within a week after the order is given, I start legal proceedings. This almost invariably causes the owner to commence work, and when the work is completed, I almost always withdraw the case.

"The bacteriological examination of sputa was commenced March 3d, that is, stations were established at various points about the city. The physicians were requested to send the sputa

to these stations and arrangements were made to collect the sputa and give the result of the examination the same day. The success of the scheme has proven very satisfactory. The report will show that 80 cases have been examined since the third of the month. This is as gratifying as it is unexpected."

THE HEALTH OF THE ARMY.

The Surgeon-General's Report for the Fiscal Year Ending June 30, 1900. Continued from March Number.

Division of the Philippines.—In 1899, with a mean strength of 39,280 regulars and volunteers, the admission rate for all causes of disability was 2395.52 per thousand of strength; for disease, 2206.36; for injury, 189.16; for gunshot injury, 52.26. The death rates corresponding to these admission rates were, respectively, 30.58, 15,28, and 12.60. Although the admissions for disease were considerably increased during this year, 2206.36 per thousand men as compared with 1776.72 in 1898, and although the death rate from all causes 30.58 as compared with 24.12 in 1898, the death rate from disease became reduced from 20.49 to 15.30 per thousand men. The increased admission rate was due to diarrheal diseases, malarial infections, and injuries. Diarrheal diseases formed 642.80 and malarial infection 624.37 of the total admission rate. The lessened rate of mortality from disease resulted from a lessened prevalence of typhoid fever, with a consequent lowering of the death rate from that disease. Eight hundred and sixty-two cases of this fever, of which 118 were fatal, gave an admission rate of 21.95 and a death rate of 3 per thousand of strength. The lower death rate was also in part due to the milder character of the malarial infections, the death rate from these diseases being only 0.89 as compared with 1.51 in 1898. These influences lowered the death rate from disease, notwithstanding a very material increase in the malignity of the diarrheal diseases, which gave a death rate of 4.58 per thousand men as compared with 2.52 during 1898. The increase in the totality of the death rate was the consequence of active service as expressed by the mortality rate for gunshot injury, 12.60 per thousand of strength as compared with 2.93 during the previous year. Two hundred and sixty-seven cases of smallpox, 78 of which were fatal, gave rates, respectively, of 6.80 and 1.99 per thousand of strength.

The sanitary condition of the garrisoned towns and villages at the outset is described as having been execrable. Filth of all

kinds underlay and surrounded the houses, and the hogs were the only scavengers. For the protection of their commands in such localities post commanders were required to consult with the local authorities with a view to remedy these conditions, and a great reformation in this respect was speedily effected.

Leprosy.—A communication on the subject of leprosy was addressed to the military governor by the chief surgeon June 4, 1900, in which he represented the number of lepers in the archipelago to be about 30,000, and urged the advisability of taking immediate steps to protect the healthy population from future infection. He submitted a "projet" for the segregation and care of lepers in the islands. The plan, which was drawn up with the assistance of Major Edie, president of the board of health, and Maj. L. M. Maus, Surgeon, United States Army, both of whom had given much study to the subject, recommends that, inasmuch as a large number of the people in these islands are the subjects of leprosy, and their presence has become a menace to the safety of the healthy population, it is recommended that there be set apart any land or portion of land now owned by the government for a site or sites of an establishment or establishments to secure the isolation and seclusion of such leprous persons as in the opinion of the board of health or its agents may, by being at large, cause the spread of the disease, and that the Government acquire for this purpose, by purchase, exchange, or condemnation, any pieces or parcels of land which may seem better adapted to the use of lepers than any land owned by the government.

Suitable islands for lepers.—Lutbang and Golo; about 60 miles from Manila. They are very rich and poorly populated. These are the most suitable islands.

Polillo; north of Luzon, very large, and could contain very well 30,000 inhabitants.

Batag; beautiful and healthy place; is a few miles from Samar, but could easily be guarded by a small gunboat.

Besides these islands, Dr. Manuel Rogel y Lebres recommends: Jau, in Bohol; Clango, in Cebu; Apo or Refugio, in Negros; an island near Guimaras, in Panay; Limasand, in Leyte; Buad, in Samar; Simara, in Romblon.

That a board of public health for the archipelago be organized without delay, with full authority to deal with all questions affecting the public health and sanitation of the islands, and to appoint the necessary agents to carry out its work.

Prevalence of Special Diseases.—Measles: In the army, regulars and volunteers, in 1899 there were reported 2,755 cases, with 3 discharges for inability, and 37 deaths.

Scarlet fever: 47 cases, with 7 deaths in 1898; 22 cases, no deaths, 1899.

Smallpox: In 1898, 92 cases, with 23 deaths; in 1899, 347 cases, with 84 deaths. Of these 342 cases, with 99 deaths, occurred in the Philippines; 72 cases, with 3 deaths, in the United States.

Vaccinia: In the year 1898, 6,916; and in 1899, 6,895 men were taken on the sick report on account of vaccinia. The number of men vaccinated is not known, but probably all the accepted recruits for the regular army—54,896 in 1898, and 47,899 in 1899—together with 250,000 United States and State volunteers, were vaccinated or revaccinated in accordance with regulations.

Thirteen deaths are reported from diseases attributed to vaccination, five of which (at San Francisco) on account of impure virus; and besides these, six other men were admitted to the sick list on account of disability attributed to it. The result of vaccination in Manila is shown by the records for the nine months from October, 1899, to July, 1900, when there were 7 deaths from smallpox in the city, whereas in the one month of March, 1899, prior to the systematic use of vaccination, there were 75 deaths from this disease.

The satisfactory results produced by the general vaccination of the natives in the district of Holguin, Cuba; in Porto Rico, and in the Philippines, in suppressing the ravages of smallpox, must be regarded as one, and not the least, of the benefits brought by our occupation to the natives of these islands.

Bubonic plague: In December, 1899, plague appeared in Manila. Two cases ending fatally occurring in the same house were reported as typhoid fever; a third case seen during life was recognized as plague. Other cases occurred in the same neighborhood. A house to house inspection was started at once. One death occurred in December, 1899, 11 in January, 1900, 35 in February, 49 in March, 44 in April, 17 in May, and 11 in June, while during each of these months from 40 to 80 Chinese died from causes unknown, they having been without medical attendance. The cases of plague reported numbered 225, of which only 58 recovered.

Major Edie's opinion, from his experience as health officer of Manila, is that little difficulty will be found in controlling the plague in any intelligent community with modern sanitary conditions.

The methods adopted to control and eradicate the disease were:

1. The prompt detection and isolation of plague cases.

2. Removal of persons who had been in close communication with an infected case to the suspect wards at the hospital.

3. Removal of all other inmates in the infected houses to the detention wards at the hospital, or quarantining such inmates in the house for 14 days.

4. Thorough disinfection and redisinfection of the house, its contents, and inmates; clothing and bedding disinfected by steam. All articles that could not be thoroughly disinfected were burned.

5. The inspection of all dead bodies of Chinese.

6. The distribution of rat poison in all houses by the inspectors themselves.

7. The disposition of the dead: Cremation principally. On account of the religious prejudices of the Chinese, their dead—the coffins being filled with disinfectants and quicklime—were buried in the "plague plot."

Typhoid Fever.—On August 18, 1898, a board of medical officers consisting of Maj. Walter Reed, Surgeon, United States Army; Maj. Victor C. Vaughan, Division Surgeon, United States Volunteers, and Maj. Edward O. Shakespeare, Brigade Surgeon, United States Volunteers, was appointed to investigate into the causes of the extensive prevalence of typhoid fever in the various camps in the United States, to call the attention of the proper commanding officers to any insanitary conditions in the camps visited, and to make recommendations with a view to their prompt correction. The report of this board comprehends a thorough investigation of typhoid fever in relation with the army from the time of its first appearance in the camps of the assembling volunteers in 1898 to the end of the Spanish-American war, and is one of, if it is not indeed *the* most valuable contribution to the knowledge of typhoid fever, particularly of the means of its dissemination, ever before published. Introduced and summed up in abstract by the surgeon-general: The assembling of 250,000 volunteer troops in military camps within a short time after the declaration of war against Spain in the spring of 1898, taxed all the bureaus of the War Department to the utmost. The medical corps of the regular army was hardly sufficient for our little army of 25,000 men. To this corps of trained medical officers were suddenly added 115 commissioned medical officers of volunteers and 382 medical officers of State organizations, most of whom had had no previous

military experience. Owing to the extensive prevalence of typhoid fever in our camps, it became necessary at a later date to reenforce this enlarged corps of medical officers by the employment of contract surgeons. The number of these in service to June 30, 1898, was 151—to September 30, 564. The number of trained female nurses in service September 30 was 1,065. The enormous task which confronted this enlarged medical department is shown by the fact that more than 20,000 cases of typhoid fever occurred among the troops encamped within the limits of the United States during the months of May, June, July, August and September, 1898. The causes for this extensive prevalence of a fatal infectious disease are fully set forth in the exhaustive report made by this board.

In 1898 there were reported 20,926 cases, with 2,192 deaths and 44 discharges on account of disability consequent on the disease. These represent an admission rate of 141.59, a death rate of 14.83, and a discharge rate of 0.30 per 1,000 of the mean strength. The deaths constituted 10.48 per cent. of the cases. There are full details of the prevalence of the disease in the several divisions and army corps. It appears that no single regiment wholly escaped; that more than 90 per cent. of the volunteer regiments developed typhoid fever within eight weeks after going into camp, and in certain of the regular regiments within three to five weeks after going into camp; that *typhoid fever is so widely distributed in this country that one or more cases are likely to appear in any regiment within eight weeks after assembly.*

Typhoid fever is disseminated by the transference of the excretions of an infected individual to the alimentary canals of others. It is more than probable that many individuals may, for a while, carry and eliminate the specific bacillus of typhoid fever without developing the disease in themselves; and that persons who have recovered from this disease may for a long time continue to carry and excrete the specific poison. Furthermore, its presence has been reported in the stools of healthy persons as well as in those suffering with dysentery and simple diarrhea; and it has been found in the most unexpected places—in the soil of localities far removed from the habitations of man, and has been isolated from drinking water supposed to be free from contamination. However, the stools of individuals sick with typhoid fever constitute the most important source for the spread of the disease, and it may be stated in a general way that typhoid fever is due to the transference of some part of the feces of an individual

to the alimentary canal of one susceptible to this infection. This transference in exceptional cases may be quite direct, as when a careless nurse soils her hands with the dejections from her typhoid fever patient and eats her food without disinfecting her soiled fingers. Generally, however, the transference is more indirect and the germs in the infected stools may multiply through many generations and be transported by water or otherwise through considerable distances. Moreover, the bacilli may pass through an intermediate host, which may be man or one of the lower animals.

So far as the spread of typhoid fever is concerned, the longevity of the bacillus after it leaves the body of the infected man is of greater importance than its possible longevity in the body. Fully exposed to the sunlight it is soon destroyed. But rolled in blankets, or deposited in the soil or other places devoid of sunlight exposure, it lives and multiplies for an indefinite period—at least for several months; and it has been found three months after death in the bodies of men who have died of the fever.

In distilled water and sterilized drinking water obtained from springs, wells, rivers and lakes, and kept at ordinary room temperature without exposure to the direct sunlight, the typhoid bacillus may rapidly multiply and may retain its vitality for three or four months. In ordinary unsterilized water the conditions that influence the life of the typhoid bacillus are many and varied. Sewage ordinarily does not form a good medium for the growth of the germ, but, as Klein has shown, the addition of nitrates renders the growth abundant, and that processes of nitrification are constantly going on in polluted water is shown by the presence of nitrites and nitrates. The detection of the typhoid bacillus when added in a small amount to a large volume of water containing numerous germs of different species is by no means an easy task, and so far as the detection of this organism in natural waters suspected of having caused typhoid fever is concerned, it is doubtful whether any one up to the present time has succeeded in isolating from such water a typical Eberth bacillus. It is not to be inferred from this that the typhoid organism is not present in such waters, but the difficulty lies in its separation and specific identification.

Finally, it is rendered evident that the typhoid bacillus is capable of retaining both vitality and virulence for months after it has been discharged from the body. Not only is this true, but it may multiply both in the soil and in water.

AMERICAN CONGRESS OF TUBERCULOSIS.

SESSION OF 1901.

The second annual meeting of the American Congress of Tuberculosis will be held at the Grand Central Palace, in the City of New York, on the 15th and 16th days of May, 1901, in joint session with the Medico-Legal Society of New York. A dinner will be given to the members and guests.

The complete list of officers and committees will be announced as early as possible. The preliminary announcement is now made to obtain the names of those who will co-operate in the Congress, and an early classification of the subjects and titles.

The Governors of the American States and Territories, and of the Dominion of Canada, have been invited to send three or more delegates from each State or province.

The Presidents of the South and Central American Republics have been invited to send delegates, and to take an active part in the work of the Congress, and the Ministers of these Republics at Washington, to designate representatives from their respective countries, and also to furnish information as to the progress of the disease, and what action in the way of preventive legislation or medicine has been taken to avert it.

The medical profession of all countries have been invited to contribute papers, to be read in their behalf by a committee selected for that purpose in case of the inability of the author to attend, and to enable those who could not hope or expect to be present to participate in the work and usefulness of the body. As the questions to be discussed involve remedial legislation, legislators, lawyers, judges, and all publicists who take an interest in the subject are also invited, both to enroll and contribute papers. The enrolling fee is $3, entitling the members to the Bulletin of the Transactions free.

On the 1st of April, the date of this notice, thirty titles of papers have been sent to the secretary, and twenty new names have been added to the enrollment, exclusive of the delegates named by the Governors of States. Unavoidable delays have occurred in sending out the notices, but it is believed that before May 1st, proximo, the enrollments will more than quadruple, and the titles

of papers are likely to reach more than could be read in open session.

Papers may be classified and read in sections, each section in charge of a chairman and secretary, to enable all the papers to be discussed. It is as yet impossible to make even a preliminary programme.

The session of the Congress will be free to both professions and the public. An appeal is made to both professions of law and medicine generally to enroll in this Congress, so that the expense, which will be large, may be made lighter to the few on whom the principal labors and responsibilities will fall.

A leading feature of the Congress will be the exposition of all kinds of electrical surgical instruments and the clinical work. Exhibitors desiring space should at once communicate with the secretary or Dr. R. H. Bell, chairman committee on space, at No. 39 Broadway, N. Y. The titles of papers should be at once sent to the Secretary, Clark Bell, Esq., 39 Broadway, New York City, General Secretary of the Congress.

The leading manufacturers have enlisted already, many of them, and the display will be on an extensive scale. The objects of the Congress will be to exchange the information and experience gained throughout the world as to forces and methods most available for the extermination of consumption, which at the present moment is a disease the most destructive of human life of any that now afflicts humanity.

The Congress has taken the entire, large, lower floor of the Grand Central Palace for the occasion, with a space for exhibitors of nearly 200 by 200 feet, with committee rooms on the other floors, and the exhibition of electrical and surgical instruments, and the clinical work relating to the disease, will be illustrated by a display we hope may excel any before made in this country.

Contributions from Boards of Health, Hospitals and the collections of the Government will be allowed to be shown in the Museum that is hoped to be large and impressive.

CLARK BELL, Esq., Secretary, 39 Broadway, New York.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

The eighteenth annual meeting of the Association will occur at the Cataract House, Niagara Falls, on May 30, 31 and June 1, 1901.

GUY HINSDALE, M.D., Secretary,
Philadelphia.

AMERICAN MEDICAL ASSOCIATION.

The fifty-second annual session (fifty-fourth year) of the American Medical Association will be held in St. Paul, Minn., June 4-7, 1901.

Arrangements have been completed for an excursion of the members of the Association to Yellowstone Park. The committee of arrangements has finally succeeded in persuading the officials to open up the park a week earlier than usual in order to accommodate the Association. A special train will be run from St. Paul to the Yellowstone Park, and the railroad officials have promised to do everything in their power to make it satisfactory to all concerned. The rates will be very low, but how low cannot at this time be definitely stated. Those who attended the meeting in 1882 will remember with much pleasure a similar excursion that was run at that time, and these will not need to be informed that the one now proposed will be full of enjoyment. Further announcements will be made later. The Yellowstone National Park contains more natural wonders than are to be found anywhere else in the world, and this will be a rare opportunity for our Eastern friends to see what this portion of our Great West possesses.

GEO. H. SIMMONS, M.D., Secretary,
Chicago, Ill.

THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The twenty-ninth annual meeting of the American Public Health Association will be held at Buffalo, N. Y., beginning September 16 and continuing until September 21, 1901.

Papers to be presented at a general session of the Association shall be in the hands of the Secretary of the Association not less than twenty days before the coming meeting, and to be printed in the transactions in full or in abstract at the discretion of the publication committee.

CHAS. O. PROBST, M.D., Secretary,
Columbus, O.

BOOK REVIEWS.

HARRINGTON'S PRACTICAL HYGIENE. For Students and Practitioners of Medicine and Medical Officers. By CHARLES HARRINGTON, M.D., Assistant Professor of Hygiene in Harvard Medical School, Boston. In one very handsome octavo volume of 718 pages, with 105 engravings and 12 full-page plates in colors and monochrome. Cloth, $4.25 net. LEA BROTHERS & Co., Publishers, Philadelphia and New York, 1901.

A comprehensive work well calculated to meet the needs of students, laboratory workers, medical practitioners and health officers. It utilizes the results of all the advances in the many special departments embraced in preventive medicine, and thereby presents a practical survey of the whole field. Thus it deals with food, air, soil, water, habitations and schools; disposal of sewage and garbage; disinfection, quarantine, military, naval, marine, tropical and personal hygiene. Its author has been long known as a votary of preventive medicine, with regard to practical measures for the prevention of diseases appertaining more or less to the various pursuits and conditions of individuals and communities. It might go without saying that no other specialty or department—for it has assumed the proportion of a department—of the science of medicine, has made such signal progress during recent years as has preventive medicine. With this progress the work before us is abreast. Exclusive of sanitary engineering and architectural work, the construction of sewers, aqueducts, hospitals, etc., which are commonly the subjects of special treatises, it is complete, authoritative and practical; and gotten up in the excellent style common to its publishers.

THE INTERNATIONAL MEDICAL ANNUAL: A YEAR BOOK OF TREATMENT AND PRACTITIONERS' INDEX, 1901.—Nineteenth Year. 12mo, pp. 682. Illustrated. Price $3.00. New York: E. B. TREAT & Co., 241-243 West Twenty-third Street. Chicago: 199 Clark Street.

This volume thoroughly maintains the high standard of excellence which the annual has long since attained. Of its more than thirty contributors there is not one who is not regarded as an authority on the subject of his essay. Special articles on X-ray Work in Medicine and Surgery have been written by Dr. Mac-

intyre, of Glasgow; Color-Blindness, by Dr. Eldridge Green, and Dental and Oral Surgery, by Mr. Turner, F.R.C.S. Toxins and Anti-toxins are the subject of a joint paper by Prof. McFarland, of Philadelphia, and Dr. William Murrell. Prof. Ruata, of the University of Perugia, contributes an article on tuberculosis, of great practical utility in the treatment of that disease. The Dictionary of New Treatment comprehends articles covering the whole range of medicine and surgery, by authors who have long been known to the readers of the manual for the excellence of their contributions.

THE USE OF THE RÖNTGEN RAY BY THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WAR WITH SPAIN (1898). Prepared under the direction of Surgeon-General GEORGE M. STERNBERG, U. S. Army, by W. C. BORDEN, Captain and Assistant Surgeon, U. S. Army. 4to, pp. 98. Illustrated. Washington: GOVERNMENT PRINTING OFFICE.

This report embraces the utility of the Röntgen Ray in many cases of gunshot wounds which would have been otherwise hopeless. On the outbreak of the war, the most prominent hospitals and the three hospital ships, Relief, Missouri and Bay State, were supplied with Röntgen Ray apparatus. Its use in these institutions has marked a distinct advance in military surgery. It has favored conservatism and promoted the aseptic treating of bullet wounds, made by leaden missiles, to such a degree as to have done away with the exploration of such wounds by probes or other means, and by this has obviated the dangers of infection and additional traumatism in this class of injuries. By its use in gunshot fractures, their form and the amount of bone comminution produced by the small-calibre and other bullets, conditions have been determined that could not have been otherwise in the living body. Cases are presented with radiographic illustrations, typical of the conditions treated of. Great pains has been taken in the reproduction of the radiographs from the negatives in the plates, so as to give the most exact presentation of the objects as shown by the Röntgen Ray possible without any retouching other than to remove some slight defects incidental to the negatives during their preparation. Altogether, the report is an admirable display of object lessons of interest to all surgeons.

PROGRESSIVE MEDICINE, Vol. I., 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor

of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 430 pages, 11 illustrations. Per annum, in four cloth-bound volumes, $10.00. LEA BROTHERS & CO., Philadelphia and New York.

The first volume of the series of 1901 of this excellent quarterly is replete with matter of practical importance. It consists of six sections. The first, on the Surgery of the Head, Neck and Chest, by Dr. DaCosta. The excellence which has characterized his contributions in previous volumes is fully maintained. Special attention is given to plastic operations about the face; surgery of the lungs, and the most recent methods of dealing with pericardial effusions. The section on the Acute Infectious Diseases, by Dr. Packard, devotes much space to a careful consideration of typhoid fever, comprehending the gist of an immense amount of material which has accumulated during the past year concerning this disease, and particularly emphasizing the points of most practical importance. The section on Diseases of Children, by Dr. Crandall, comprehends particularly valuable considerations with regard to surgical practice. Section on Laryngology and Rhinology, by Dr. Logan Turner. Malignant diseases and tuberculosis of the throat and nose are among other subjects particularly considered. Section on Otology, by Dr. Randolph, devotes much space to the diagnosis and treatment of the inflammatory diseases of the ear. It is essentially practical. Altogether, the volume evidences comprehensive research and study by the several authors, and great care in its preparation.

TUBERCULOSIS AS A DISEASE OF THE MASSES AND HOW TO COMBAT IT. Prize Essay, by S. A. KNOPF, M.D. The "International Congress to Combat Tuberculosis as a Disease of the Masses," which convened at Berlin, May 24-27, 1899, awarded the International Prize to this work, through the committee, on July 31, 1900. Published by M. FIRESTACK, 200 West Ninety-sixth Street, New York. Price, paper, 25 cents; cloth, 50 cents.

A pamphlet of 86 pages, comprehending a terse history of tuberculosis, of its etiology, symptoms, propagation, predisposition, prevention and treatment, with special reference to protective measures against its spread among the masses. It is an essay of extensive practical utility to all health authorities, and others whose duty it is—and it is everybody's—to aid in the prevention of this, the most universally prevalent and the most fatal disease that afflicts mankind.

A NEW WAY AROUND AN OLD WORLD. By the Rev. FRANCIS E. CLARK, D.D., President of United Society of Christian Endeavor. 12mo, pp. 220. Copiously illustrated with photographs, map, etc. Price, $1.50. New York: HARPER & BROTHERS.

An interesting story of an all-steam route of the first American party in a journey around the world through Europe, who traveled over the Trans-Siberian Railway. The trans-Siberian all-steam route had been open but a few days when the party took passage at Vladivostock, and, beginning with that interesting city, have described the route by river and railway, the stopping places and scenery all the way across to Irkutsk, and thence to Moscow, a journey of 6,000 miles. The rivers were "lower than they had been known to be for many years"; there were, consequently, many groundings, appointed railway connections deranged, a bridge burned and sundry other delays, insomuch that the journey took thirty-eight days. The delays, though uncomfortable in many respects, have greatly added to the interest of the book, for without them there would have been less opportunity for a description of a most interesting country and people revealed by the Trans-Siberian Railway.

LIFE AND REIGN OF QUEEN VICTORIA. Being a Complete Narrative of her Grand Life and Beneficent Reign, the most distinguished of the nineteenth century, comprising the Record of her Ancestry, the Story of her Childhood, Youth, Coronation, Courtship, Marriage, and the Important Events of her Reign. HER DIAMOND JUBILEE CELEBRATION, her Closing Days, her Death and Burial and the Accession of her Successor. Including the lives of KING EDWARD VII. and QUEEN ALEXANDRA. By Prof. CHARLES MORRIS, Renowned Author and Historian, and MURAT HALSTEAD, Celebrated Historian and Journalist. 12mo, pp. 485. Copiously illustrated with many portraits and views in half-tones. INTERNATIONAL PUBLISHING SOCIETY. Chicago: DOMINION COMPANY.

To the comprehensive title page of this book, little need be added. The authors are a sufficient guaranty for its faithfulness and excellence of expression. No library can afford to be without the Life and Reign of Victoria, and, besides this, this particular volume is ornamental for the parlor table.

BULLETIN OF IOWA STATE INSTITUTIONS, JANUARY, 1901 (under the Board of Control). Published quarterly. TELEGRAPH

PRINTING CO., Atlantic, Ia. A publication of much practical utility, comprehending special reports, papers and discussions on the several institutions and other matters germane thereto, with illustrations showing structures, arrangement and grounds.

SELF-EXAMINATION FOR MEDICAL STUDENTS: A ten-cent pocket-book, containing 3,500 questions on medical subjects with which all medical students should be acquainted, is well calculated to promote its purpose. By its help the student can quiz himself on all the important branches, or review any one subject in which he feels himself to be deficient.

REPORT OF THE COMMISSIONERS OF EDUCATION FOR THE YEAR 1898-'99. Volume II. Washington: GOVERNMENT PRINTING OFFICE.

This volume corresponds with Vol. I., reviewed in February number. It opens with an elaborate chapter on Education and Crime, subdivided and contributed to by Horace Mann, E. D. Mansfield, Richard Grant White, B. F. Tweed, William T. Harris, Benjamin Reece, David C. Towey, A. W. Gould and Rebecca Harding Davis, with statistics from the U. S. Census, 1890. Taken altogether, it is the most complete summary of the subject that has come to our notice, and is worthy of the widest possible distribution among educators; and, in promotion of this, presumably it will be so distributed in special abstract. Succeeding chapters comprehend special reports on and statistics of education in Canada, work for a new South, education in Alaska, introduction of domestic reindeer in Alaska. Consular reports—commercial education in Antwerp, study of commerce in France, the Vienna Export Academy, the study of tropical diseases in Great Britain, education of German consuls, education in Russia, care of children in German schools, household schools, mutual aid societies, etc., in various countries; foreign universities and other institutions of higher education, city school systems and higher education. Current questions—teachers' salaries, pensions, teaching force, women students in Prussian universities, causes of mortality among teachers, etc.; professional schools, agricultural and mechanical colleges, statistics of normal schools, statistics of secondary schools, manual and industrial training, commercial and business schools, education of the colored race, statistics of reform schools, schools for the defective classes, statistics of public kindergartens, contributions to the history of normal schools in the United States, portable school buildings,

statistics of elementary education in foreign countries, necrology, home and foreign, for 1898. A veritable encyclopædic history of education for the year, together with collateral information of practical utility to every phase of education.

THE WORK OF CIVIC IMPROVEMENT. By JESSIE M. GOOD. An illustrated pamphlet of 36 pages, contains many suggestions of practical utility for grading and improving streets, laying out grounds, planting shrubbery and beautifying surroundings. It represents the National League of Improvement Association, whose purpose is to bring into communication for acquaintance and mutual helpfulness all organizations interested in the promotion of outdoor art, public beauty, town, village and neighborhood improvement.—Floral Publishing Co., Springfield, O.

CONTEMPORARY LITERATURE.

MALARIA AND MOSQUITOS.

L. O. HOWARD, chief entomologist of the United States Department of Agriculture, tells in the April *Century* the amazing story of the relation between "Malaria and Certain Mosquitos."

As plain as this story is, the filling of all the gaps and the rounding out of all the details have taken years of patient work. Before Laveran's original discovery of the parasite became generally known, an American physician, Dr. A. F. A. King, of Washington, propounded the idea that malaria is transmitted by mosquitos. His paper read before the Philosophical Society of Washington was a masterly one, and summarized in an admirable way the arguments favoring such a theory; and the long-delayed proof now comes as a triumphant vindication of the views of this eminent American physician—views which were at first received with general incredulity. Even of late the "mosquito theory," as it has been called, has met with strong opposition on the part of conservative physicians and laymen. The point is often made by such persons that malaria exists in localities where there are no mosquitos, that persons get malaria without having been bitten by mosquitos, and, stupidly enough, that mosquitos exist in numbers where there is no malaria. All opposition, however, has been forcibly met, and the consensus of expert opinion is now united in the conclusion not only that the agency of mosquitos of the genus *Anopheles* is the only demonstrated method of the transmission of

malaria, but that it is perhaps, even probably, and some say certainly, the only method by which the disease enters the human body. . . .

In the United States many physicians in malarious neighborhoods have taken up the question with enthusiasm, and persons living in mosquito-ridden localities are organizing and beginning exterminative work. At the present time there is probably more intelligent work being done or being planned against mosquitos in the United States than elsewhere in the world. The great, brackish marshes of the Atlantic coast and the many inland swamps and pools have made many portions of the United States great breeding-places for mosquitos. The vast majority of our mosquitos, however, are noxious only from their bite. Most of them belong to the genus *Culex,* and in the stomach of the mosquitos of this genus the malarial parasite dies and is digested. These mosquitos breed everywhere in standing water. They are found not only in the brackish marshes, in the great swamps, and in all ponds in which fish are not numerous, but they breed also in horse-troughs, in rain-water barrels, in water running slowly through open sewers, and even penetrate through the perforated sewer-traps in large cities, and breed in the sewers below ground. A transient pool of surface water left by heavy rains will breed a generation of mosquitos in a little more than a week. They will breed in the water collected in the hollows of old stumps, in old bottles or tin cans thrown on the dumps or in vacant lots; in fact, wherever still water stands for a week or ten days in the summer time the females of some species of mosquito will lay their eggs upon it, and a generation will be produced. This water need not be perfectly uncovered, since a female mosquito, in her desire to find a place to lay her eggs, will enter through a very small orifice. Water-tanks, therefore, not perfectly covered, afford such situations. Old wells or cesspools, with board covers in which there are cracks wide enough for a mosquito to enter, are often most prolific breeding places.

The general question of mosquito control has been carefully studied. The writer conducted a large series of experiments a number of years ago, before the mosquito-malaria relation was established, with a view to giving the inhabitants of mosquito localities some relief from the attacks of these pernicious creatures. The three main remedies are: the drainage of swamps and standing pools where this is possible; the introduction of fish, and particularly of certain voracious species, such as the sticklebacks and the

top-minnows, into fishless pools the water of which is used for watering live stock; and, third, the treatment of pools or ponds, or other bodies of water which cannot be drained, with kerosene. All these measures are efficacious. A combination of all is usually found necessary in any given neighborhood. Drainage of swamps as a community measure is highly to be recommended from every point of view. The use of kerosene where drainage is impossible is perfectly efficacious in destroying the wigglers, or larvæ, of mosquitos. The amount to be used is about one ounce for each fifteen square feet of water surface, and the application should be repeated every fortnight. The kerosene not only kills the wigglers when they come to the surface to breathe, but kills the female mosquitos when they alight upon the surface of the water to lay their eggs.

AN EFFORT TO BRING THE SCHOOL AND THE HOME TOGETHER.

The gulf between parent and teacher is too common a phenomenon to need exposition. The existence of the chasm is probably due more to carelessness, to pressure of time, or to indolence than to any more serious delinquencies; yet all will admit the disastrous effects that flow from the fact that there is not the close intellectual and spiritual sympathy that there should be between the school and the home.

Whether or not this failure of teacher and parent to come to a close and perfect measure of sympathetic co-operation is more prevalent or less prevalent in city than in country is not of great importance in this discussion. The purpose of this article is to describe very briefly an attempt which is being made in the State of Michigan to bridge the gulf—to create a common standing-ground for both teacher and parent—and on that basis to carry on an educational campaign that it is hoped will result in the many desirable conditions which, *a priori,* might be expected from such a union. At present the movement is confined practically to the rural schools. It consists in the organization of a county "Teachers and Patrons' Association," with a membership of teachers and school patrons, properly officered. Its chief method of work is to hold one or more meetings a year, usually in the country, or in small villages, and the programme is designed to cover educational questions in such a way as to be of interest and profit to both teachers and farmers.—From "Neighborhood Co-operation in School Life—the 'Hesperia Movement,'" by Kenyon L. Butterfield, in the *American Monthly Review of Reviews* for April.

THE FAMILY DOCTOR VERSUS THE SPECIALIST.

Much of the specialist's operative work of to-day is worthy of the highest praise; on the other hand, a large percentage of operative work is ill-advised, superfluous and harmful, and as soon as the more intelligent people of the community realize that such is the case, they will again turn for advice to the intelligent family practitioner; they will admit him again to the inner family council and trust to him to shield them from the meddlesome treatment of our times, and to deliver them into conservative and safe hands. And if the future family practitioner is to regain lost ground, again to aspire to reach that plane in the practice of general medicine which is properly his, and again to enjoy the full confidence of his clientéle, it must be *through his own individual efforts*—by educating himself to become a *diagnostician*. In view of the complex character which is a feature of some of the special examinations, this may seem a herculean task; but I am convinced that all medical men who are fitted by nature and proper education for their work will in reasonable time become competent diagnosticians, and will be capable of formulating precise indications for treatment, provided ample opportunity for laboratory and bedside instruction be offered and sought, and provided that no time be wasted experimenting with thousands of old and new and useless drugs in the endeavor to adapt a complex, cumbersome and largely superfluous materia medica to the various symptoms of acute and chronic illness.

The common-sense practitioner knows by experience that the constant, frequent prescribing of innumerable drugs only ends in detriment to his patients. A working knowledge of hygiene and dietetics, climato-, hydro- and mechano-therapeutics, simple medication, and few drugs are the successful agents in internal medicine; and the sooner the physician will condense his pharmacopœia and materia medica to a vest-pocket edition, the more readily will his efforts meet with success in the practice of his profession, and the sooner will the "Christian Science" delusion disappear.—From "The Relation of the Family Doctor to Recent Progress in Medical Science," by Augustus Caillé, in the *American Monthly Review of Reviews* for April.

YOUTHFUL LIFE-SAVERS.

In a paper in the April *St. Nicholas*, on "Life-Savers, Old and Young," Gustav Kobbé tells of the remarkable doings of half a dozen young boys and girls.

Among those not connected with the Government service who have received medals for saving or aiding to save life, are a number much younger than the average age of this student crew. One of the first girls thus honored was Edith Morgan, of Hamlin, Michigan, who endeavored with her father and brothers to row in a northerly gale and heavy sea to a vessel capsized three miles out. When the boat was forced back, Edith aided in clearing a track through logs and driftwood for the surf-boat, which had meanwhile been summoned, and also helped launch the boat. On a previous occasion she had stood in snow six hours helping the life-savers work the whip-line of the beach apparatus.

Edith Clarke, when sixteen years old, and a pupil in a convent of Oakland, California, plunged into Lake Chabot to rescue a companion who, in wading on the treacherous margin, had disappeared in sixty feet of water. Edith seized the unconscious girl, and keeping her head above water with one arm, paddled with the other, and trod water until a boat came to the rescue.

Marie D. Parsons of Fireplace, Long Island, New York, was only ten years old when, seeing a man and a child swept off a pleasure boat by the boom, and observing that the child clung to the man so that the latter could make no headway, she sprang into a small boat and reached the spot just in time to save these two lives.

Maud King, when only thirteen years old, saved three lives off Castle Pickney, the lighthouse depot in Charleston Harbor. At the time there was a southwest gale and a heavy sea. In a furious squall, which added impetus to the gale, a yawl containing three men and a boy was capsized. The boy managed to swim ashore; but two men got only as far as the piles of the wharf. There they hung, too exhausted to climb up, while the third man, unable to swim, clung to the yawl. Maud, notwithstanding her mother's protests, prepared, unaided, to launch a small boat in the boisterous sea. But she was joined by her aunt, Mrs. Mary Whiteley, and together this brave girl and her aunt rescued the imperiled men.

Frederick Kernochan, when only ten years old, sprang into the Navesink River and rescued a woman. Henry F. Page, of Schenevus, New York, is also one of the lads who at ten years old have been honored with life-saving medals. Fully dressed, he plunged into a mill-pond and saved one of his playmates who had suddenly found himself in deep water.

William B. Miller, thirteen years old, of Elkton, Maryland, showed he had a cool head as well as a brave heart by the rescue of his companion, who had stepped from shallow water into a deep

hole. When William seized the drowning lad, the latter began to struggle, and it was a toss-up whether William's life would be sacrificed or not. But with great adroitness he, while swimming, lifted the struggling boy to a tree-trunk which protruded into the river, and thus saved both his companion's life and his own.

When the "O. M. Bond" of Oswego was stranded an eighth of a mile out from Rondeau, Ontario, and the crew were hanging, half perished, in the rigging, Walter Claus, a lad who lived upon a farm not far away, made four trips out to the wreck through the raging sea in a small boat, and by his own exertions saved the entire crew.

These young rescuers were inspired by the noble impulse to risk their lives for the lives of others. Their exploits awaken not only the gratitude of those whom they saved, but the admiration of all to whom knowledge of their heroism may come. The age of chivalry has by no means gone by; for what can be more truly chivalrous than the deeds of these young heroes and heroines of our coast?

THE BELL BILL.

The Bell bill is dead. The extraordinary "compromise," which it was supposed by its promoter would meet all difficulties, viz., the licensing of Christian Scientists to practise, only excluding them from treating surgical cases and cases of infectious disease, was foredoomed to failure. It is scarcely likely that people who deny the existence of disease at all can be trusted to be scrupulously exact in diagnosticating infectious from other disease, even assuming that ignorance was presumptive evidence of capacity to do so. On the whole, the proposition reminds us forcibly of the newly married wife's suggestion for the proper settlement of all domestic questions. "Now, darling," she is reported to have said, "in order that we may always pull well in harness together, let us agree that you shall decide all the big questions that are ever at issue between us, and I will settle all the little ones—and," she added, thoughtfully, "I will decide which are big ones and which are little ones."—New York "Medical Journal."

EAT ALL YOU CAN, MOTHER!

An old man whose hair and beard were cut in a chaste, rural design appeared in one of the table d'hote restaurants the other day. He had his wife with him. That was more than the old lady could say of her hearing. She was almost stone deaf, which gave everybody a chance to find out what splendid lungs her husband had.

The meal was luncheon. The price which the old man was asked after he had ordered two meals was 75 cents.

"Seventy-five cents!" he exclaimed. "You don't mean apiece?"

"Yes, sir."

"Gracious!"

He thought it over a minute or two. Then he looked at his wife as if considering whether he should try to get the dreaded news past the old lady's tympanum. Evidently he gave it up. But he did what he could. When the first course came on, he leaned over and shouted in her ear:

"Eat all you can, mother! I'll tell you why after a while!"—New York "Sun."

PUBLICATIONS RECEIVED.

Proctorrhaphy: The Suspension of the Rectum for the Cure of Intractable Prolapse and Inversion of that Organ. Chas. P. Noble, M.D., Philadelphia.

Acphrorrhaphy. *Ibid.*

Address on Obstetrics. *Ibid.*

Abdominal vs. Vaginal Hysterectomy. Henry O. Walker, M.D., Detroit, Mich.

Tuberculosis. E. Mather, M.D., Birmingham, Mich.

Aseptic Minor Gynecology. A. H. Goelet, M.D., New York.

Impressions of the Medical Side of the War in South Africa. G. Sterling Ryerson, M.D., Toronto, Can.

Failure of the Consensus Judgment with Reference to Tuberculosis. Ch. Denison, M.D., Denver, Col.

Injuries of the Eyelids and Eyeballs. L. Webster Fox, M.D., Philadelphia.

Neglected Clinical Opportunities in American Centres. S. A. Knopf, M.D., New York.

Pharyngeal Adenoids and Hypertrophied Tonsils. J. H. Woodward, M.D., New York.

The Work of Civic Improvement. Jessie M. Good, Springfield, O.

Hygienic and Remedial Value of a Good Medicinal Soap. J. Hobart Egbert, M.D., Baltimore, Md.

Prostatic Obstruction: A Contribution to the Bottini Operation for the Radical Cure. Bolton Bangs, M.D., New York.

Need of State Endowments for the Advancement of Medical Science. D. B. St. John Roosa, M.D., New York.

Treatment of Nasopharyngeal Adenoids. Louis I. Nautenbach, M.D., Philadelphia.

Gonorrhœal Conjunctivitis; Its Treatment. *Ibid.*

Assimilation of Phosphorus. R. W. Gardner, New York.

Sewage Disposal. R. S. Lea, M. E., Montreal, Can.

Caroid in the Removal of Tattoo Marks. A. H. Ohmann-Dumesnil, M.D., St. Louis, Mo.

Vegetable Digestive Ferments in the Treatment of Typhoid Fever. *Ibid.*

The Treatment of Asthma. *Ibid.*

A Scientific Basis for Medicine. E. C. Hebbard, M.D., Boston, Mass.

The Etiology of Yellow Fever. An Additional Note. Walter Reed, M.D.; Jas Carroll, M.D., and Aristides Agramonte, M.D., Washington, D. C.

Varicocele and Its Cure, Papers Relating to. Geo. M. Sternberg, Surgeon-General, U. S. A., Washington, D. C.

Compendium of Recent Literature on Various Lesions of the Genito-Urinary Tract and Methods of Treatment. Od. Chem. Co., New York.

Closure of Cutaneous Wounds without Suture. Howard Lilienthal, M.D., New York.

Abdominal Sections. Charles Gilbert Davis, M.D., Chicago.

The Dental Outlook in Cuba. Erastus Wilson, M.D., Dentist, Havana, Cuba.

Education of the Body—A Plea for. Clyde E. Ehinger, M.D., West Chester, Pa.

Municipal Law and Its Relations to the Constitution of Man. R. S. Guernsey, Esq., New York.

The History, Aim and Purpose of the Medical Societies of the State and County of New York. Frank Van Fleet, M.D., New York.

Tuberculosis and Tuberculin. Dr. Brush, Mount Vernon, N. Y.

Digestion. The American Ferment Co., Jersey City, N. J.

Is Intestinal Antisepsis Possible? Thomas E. Satterthwaite, M. D., New York.

Tuberculosis in Pennsylvania. Guy Hinsdale, Philadelphia.

Hygiene in the Treatment of Dyspepsia. Brunswick Pharmacal Co., New Brunswick, N. J.

Eye and Ear Hospital, Annual Report. Brooklyn, N. Y.

Friends' Asylum for the Insane, Annual Report. Frankford, Philadelphia.

THE SANITARIAN.

JUNE, 1901.

NUMBER 379.

THE AMERICAN CONGRESS OF TUBERCULOSIS.

The second American Congress of Tuberculosis convened in conjunction with the New York Medico-Legal Society, as per announcement, on the morning of May 15, 1901, at the Hotel Majestic, in the city of New York.

There was an audience of about fifty members of the society and delegates to the Congress from several States of the Union, from Canada and other American nationalities, present, representative of the interest in the purpose of the Congress, by the civil authorities from whom they presented credentials.

The convention was called to order and welcomed by CLARK BELL, Esq., President of the Medico-Legal Society, as follows:

ADDRESS OF WELCOME.

By CLARK BELL, ESQ., LL. D., President Medico-Legal Society.

My Dear Colleagues of the Medico-Legal Society, Officers and Members of and Delegates to the American Congress of Tuberculosis: It is due to you and through you to not alone the professions of Law and Medicine, but to the great mass of people, who are so deeply afflicted by the dread disease, which is so terribly destructive to human life, that some reasons and perhaps explanations should be made for the organization of this Congress.

The Medico-Legal Society, which long ago ceased to be a local body, is not only National but International in its scope, influence and action, has come to consider the question of appropriate legislation to prevent the spread of tuberculosis as one of the supreme and most profoundly important questions of forensic medicine that is likely to come under the examination of lawyers, physicians, lawmakers and statesmen, who study the welfare of the race.

You meet to consider tuberculosis in all its aspects, but above all the means for its prevention. Its nature, characteristics, extent and results are and should be fruitful themes for your careful examination and most scrutinizing study, but the overpowering, all-important and crucial question of all is, from a medico-legal view point, can its spread be averted by legislation, or can legislation aid in its prevention?

The most thoughtful men in Great Britain, three years since, organized a movement for the United Kingdom, in which the ablest lawyers, physicians and statesmen united for the consideration of this great question, over which the Prince of Wales presided, and in which he was deeply interested. It set in motion a world-wide question along lines of the broadest statesmanship.

Italy followed with a similar movement, in which the evil was recognized and its enormous interest conceded. The scholars of that country also asked what was the duty of the race in such a peril, and how could the ravages of that dread devastator be even diminished?

There seemed to be no action contemplated by the great medical bodies in our country to organize any movement for the prevention of tuberculosis. The lamentable death of Dr. A. L. Loomis appeared to be on the eve of such a movement, and had his life been prolonged there is good reason to think that ere now he would have aroused the medical profession of our country to a united effort for the prevention of consumption.

In default of any such effort by the medical profession in this country, the Medico-Legal Society, following the example of the united professions and men of affairs who organized the British association, before referred to, obtained the co-operation of the professions. The Medico-Legal Society initiated the movement in February, 1900, and organized the body which to-day holds its second annual session.

The report of last year's Congress, with its printed Part I of its Bulletin, was presented to the 13th International Medical Congress at Paris in August, 1900, by a select committee of the American Congress.

The most remarkable, and to my mind the most important action co-ordinate, was organized in the Canadian provinces last February. At a conference among the best lawyers, statesmen and physicians of the Dominion of Canada held at Ottawa, the Society for the Prevention of Tuberculosis was formed. His Excellency Earl Minto presided, the Lieutenant-Governors of the several pro-

vinces were made vice-presidents, and the management intrusted to Sir James Grant, M. D., as president, and two officials from each province, one a physician and one a lawyer or member of the Dominion or Provincial Parliaments.

This body is most distinctly under the authority and protection of the Government, and I predict for it a marked success in the Dominion of Canada.

It would not be proper or right for me in this place, or on this occasion, to omit to notice the organization of a society at Toronto, in Ontario, which has already made itself felt in the legislation of that province under the presidency of Dr. E. J. Barrick, of Toronto, a member of this Congress, and who will address you on a phase of this question, and to the labors of his colleague, Dr. Bryce, of the Board of Health of Ontario, who have placed that province in the vanguard of practical legislative action, looking toward the arrest of the spread of consumption.

It is also worthy of mention that a society has been organized in the State of Illinois, entitled "The Illinois Society for the Prevention of Tuberculosis," of which Dr. John A. Robinson, an eminent physician of Illinois, is secretary, who is a member of this Congress, and who will present a paper "On the Need of a National Interstate Society for the Prevention of Tuberculosis."

A second session of the British Association has been called to meet next July in London, and invitations have been sent to foreign countries to send delegates to its meeting, at which the then Prince of Wales had consented to preside before he came to the throne.

That body has sent an invitation to the American Congress of Tuberculosis to send delegates there at the July session of 1901.

In order that the medical profession might be fully represented throughout the nation, all the State medical societies and all the academies of medicine have been invited to enroll and co-operate, and to send delegates to this session, some of whom have done so.

The question of the construction of sanatoria in the States is attracting great attention, and the most important feature of this conference is that the Governors of all the States and Territories of the Union and of Canada and of the States of South and Central America were invited to send delegates here. The Governors have very generally made the appointments, only two Governors in the Union declining, and the illness of one and absence of others has prevented their selection in a few States; but the names of other delegates selected are expected.

The shortness of the time prevents many of the Central and South American States from being represented, but notice has been given that all papers contributed to this Congress, which reach its officers after the session and prior to August 15th, will still be embraced in its Bulletin.

This, gentlemen, brings me to a more agreeable duty, that of presenting the President of the American Congress of Tuberculosis, Dr. A. N. Bell, the veteran sanitarian, who for more than a quarter of a century has been at the head of sanitary science in our country, but who, on account of deafness, desires to vacate the chair on your election of a successor.

As two bodies are here meeting in joint session, I hope that the selection of his successor and of permanent officers of this American Congress will be deferred until after the opening exercises are concluded, except the appointment of a nominating committee, whose report can be accepted at the afternoon session.

THE PREVENTION OF TUBERCULOSIS.

By A. N. BELL, A. M., M. D., President of the American Congress of Tuberculosis, New York, May 15, 1901.

This Congress is in perpetuation of the first American Congress of Tuberculosis, held here in February, last year, which, as you have already been informed, was prompted by the organization of the National Association for the Prevention of Consumption, in London, the year before. The striking similarity of the membership of that organization to that of the New York Medico-Legal Society, inasmuch as it was composed of physicians and lawyers, and of the most intelligent and progressive persons of other pursuits, eminently available for the promotion of the objects of the organization, was promptly grasped by the ever vigilant and aggressive altruist who has just addressed you; and it is to him especially that this organization owes its existence.

The nature of Tuberculosis is now common knowledge. All intelligent persons now know that it is contagious and that it is the most universally prevalent and fatal disease that afflicts the human race. Yet, it is known to be preventible; and the *prevention* of Tuberculosis is the now leading thought of sanitarians everywhere. The purpose of this Congress is to aid in the practical application of this thought.

Tuberculosis in all its forms is the work of a microbe, the tubercle bacillus, a living organism, which when it once gains foothold in a susceptible subject, multiplies in countless millions. It is by the transmission of these bacilli from person to person and from animals to persons that tuberculosis in communicated. The chief way by which they are transmitted is by means of the expectoration of affected persons, which contains them in myriads, and when the expectorated matter becomes dry, the germs are disseminated in the form of dust round about and liable to be inhaled by persons or animals in the vicinity. And, unfortunately, consumption is so prevalent and insidious that progressive health authorities have recognized the danger of expectoration in all places where the sputum is likely to dry and leave its residue to be disseminated in the air and become the means of spreading consumption, and have instituted measures for its prevention. Such efforts are praiseworthy and should be enforced to the utmost extent, as should be also the kindred practice of collecting and destroying the sputum of known consumptives everywhere; but such efforts are essentially of small scope when considered in relation to the universal distribution of tubercle bacilli, whose maintenance everywhere evidently depends upon susceptible subjects among the lower animals as well as mankind.

Tuberculosis has been long known to be no less universal and fatal among domestic animals, especially those of the bovine species, than among mankind; and for the most part the conditions of its prevalence are the same in both.

That consumption is not everywhere and in all places correspondingly prevalent with the germs round about is because persons in sound health possess the physiological power of resisting and destroying them. The natural secretions of the respiratory organs of healthy persons arrest and devour them by oxidation, and they are cast off.

There must be besides the seed the soil adapted to their planting and nutrition; otherwise they cannot obtain foothold. But the cosmopolitan nature, various propensities, occupations and habits of mankind are such as to always present a more or less fruitful soil for the maintenance of tubercle bacilli. And no community, to our knowledge, surpasses New York in the display of the predisposing conditions. Moreover, it is an old story to some of us who have taken notice of its rehearsal for many years.

Indeed, it may be said of the health department of this city from the time of its first organization on a scientific basis thirty-five

years ago to the present time, it has constantly exhibited the predisposing conditions of tuberculosis in the community.

The exceeding prevalence of consumption in the crowded and filthy tenement houses among the stifled, poorly nourished and badly clad occupants; the relative prevalence of the disease in the different wards of the city with relation to density of population; and the Factory Inspector's display of the disease-distributing sweatshops, are not new revelations. Some of us have had familiar knowledge of these cultures for more than forty years. But it is only just now, as it were, that they have been intelligently recognized by the lawmakers. The new tenement house law and the establishment of sanatoria for the poor victims of the preventible conditions referred to, are encouraging indications. But approximate conditions pervade the community and society at large. It is for the promotion of efforts to overcome such conditions wherever they exist, that this Congress has been organized.

From a physiological standpoint, all observers appreciate the important difference which exists in regard to the requirements of nutrition between the young of all animals and those of mature growth, and in none is it more marked than in the human species. In infancy, and throughout the growing period of life, not only is it necessary to repair the waste of tissues constantly going on in the young as well as in the old, but the frame has to be built up to the degree of development it is destined to reach. To meet this demand on the part of the animal economy, is the foundation of the enormous appetites and rapid digestion common to the young of all animals. Every organ of the body, in addition to sustenance, appropriates the additional amount of nutriment necessary to give it required bulk. The current of nutritive life in the young is, therefore, an exceedingly rapid one, and the especially remarkable feature of it is that the blood itself, from which the organism is built up, receives its impressions and modifications—its constitutional predisposition—chiefly from the nature of the food during the growing period of life. Such, indeed, is the main foundation of the so-called "hereditary" diseases, for it is well known that the offspring of progenitors with well-marked constitutional tendencies may often have their hereditary tendencies wholly overcome, and a radical change effected, by a change in the quality of the nutriment and the physical surroundings; and, on the contrary, the offspring of those possessed of the highest degree of physical organization may be dwarfed to the lowest degree of degeneracy by witholding the necessary conditions of healthy development,

or by subjecting them to poor food and a vitiated atmosphere, deprived of sunlight.

That city cow-stable milk is peculiarly liable to produce diarrhœa, debility and marasmus in infants has been long known; and recent knowledge shows that intestinal tuberculosis is communicated by the same means.

Other food, of adults as well as of children, is liable to tuberculous contamination by exposure to the germs afloat as dust in the atmosphere, and particularly in rooms that have been or are occupied by consumptives, or to the dust shaken from clothing and bedding that has been so exposed. This danger is the greater, since facts demonstrate that the tubercle bacillus preserves its virulence through three or four removes, and that successful inoculations have been made with tubercular matter from a patient who had been dead for thirty-six hours, and with *sputum* which had been in a dried condition for twenty days. In experiments on animals, tuberculous food has been found to produce no effect after having been boiled, provided the boiling was thorough. Some veterinarians believe that it is communicated by forage, soiled by the expectorations of diseased animals and consumed by the healthy.

It is notable, in this respect, that in the marked progress of practical sanitation in recent years veterinarians are in the vanguard, and chiefly because people are wont to respond with more alacrity and with greater liberality for the suppression of an epizootic among their horses or a pleuro-pneumonia among the horned cattle than for the arrest of small-pox or the prevention of consumption. Individuals, communities and States will make liberal appropriations to improve the breed of stock or contribute to the contest for a prize at a dog-show, while they will refuse assistance or oppose a tax for the admission of air and sunlight into a stunting school, or for the drainage of a marsh which by its emanations and cultivation of mosquitoes is a perennial source of human degeneracy, disease and death. It is, therefore, fortunate, that in the progress of veterinary sanitary science, it has been discovered that many of the most fatal and loathsome diseases which afflict the human race are equally common to—if, indeed, they do not actually take their rise from—domestic animals. Tuberculosis, scrofula, small-pox, syphilis, malignant pustule, hydrophobia and trichinosis are examples. Veterinary sanitary science, therefore, may well be regarded as the right arm of public hygiene.

In conclusion, it has been my purpose rather to display the

field of labor for the prevention of tuberculosis than to attempt any detail of the procedures. It is sufficiently comprehensive and, I think, sufficiently perspicuous to enlist the co-operation of all intelligent people.

But it is incumbent for me to no longer be an obstacle to the work of the congress by my incompetency for this chair. The imperfection of my hearing is such as to make it impossible for me to keep the run of the proceedings. I, therefore resign the honor of longer presiding, and request that you proceed to elect a successor.

On motion, the president appointed a nominating committee to report at the afternoon session.

Mr. Clark Bell then read the roll of members present, and the reading of papers followed. They will be reported in full, together with discussions, in the Bulletin, as soon as practicable. Several of them will also appear in these pages.

At the opening of the afternoon session the nominating committee reported as follows:

THE AMERICAN CONGRESS OF TUBERCULOSIS
FOR 1901.

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PRESIDENT:

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Secretary State Board of Health, Brattleboro, Vt.

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WM. H. MURRAY, M. D., Plainfield, N. J.
C. S. WARD, M. D., Warren, Ohio.
LUIS H. LABAYLE, M. D., of Nicaragua.
E. P. LACHAPPELLE, M. D., Montreal, Canada.
JUAN A. FORTICH, M. D., Cartagena, Colombia, S. A.
J. C. SHRADER, M. D., Des Moines, Iowa.
LOUIS LEROY, M. D., Nashville, Tenn.
MAJOR A. HAVARD, U. S. A., Vice-Prest. for Cuba.
PROF. S. F. WEEKS, M. D., Portland, Maine.
J. HILDEGARDE TYNDALE, M. D., Lincoln, Nebraska.

SECRETARY AND TREASURER:
CLARK BELL, Esq., City of New York.

INFLUENZA AS A FACTOR OF RECENT MORTALITY IN CHICAGO.

Abstract from Bulletin of the Chicago Health Department for March, 1901.

Pneumonia has displaced the "Great White Plague"—pulmonary consumption—as the principal cause of death in Chicago during the last ten years. In the previous half century consumption had levied the heaviest toll on human life in this city, but in the decade 1891-1900 there were nine per cent. more deaths from pneumonia than from consumption.

Between 1851 and 1890, inclusive, during which period deaths and their causes were recorded with increasing accuracy and fulness, there were 25,719 deaths from consumption and 16,577 from pneumonia—9,182, or more than thirty-five per cent. excess of consumption deaths. Between 1891 and 1900, inclusive, there were 22,957 deaths from consumption and 25,228 deaths from pneumonia—2,271, or nine per cent. excess of pneumonia deaths.

In the decade 1881-1890 there were 147,514 deaths recorded from all causes—out of which number there were 9,915 from pneumonia, or 672 deaths from this cause out of every 10,000 deaths from all causes.

In the last decade, 1891-1900, there were 247,240 deaths recorded from all causes, including 25,228 deaths from pneumonia—or 1,019 deaths from pneumonia out of every 10,000 deaths from all causes.

In the former decade the death rate of pneumonia was 12.36 per 10,000 of population. In the last decade this death rate was 18.03 per 10,000 of population.*

The foregoing figures show an increase of nearly forty-six (45.8) per cent. in proportion to population, and of more than fifty (51.6) per cent. in the actual number of pneumonia deaths in the last over the previous decade.

Death rates of pneumonia advance enormously with advancing age—roughly, in this country from 100 in every 100,000 of the population living between fifteen and forty-five years, to 260 of those between forty-five and sixty-five, and to 730 of those over sixty-five years of age—and some part of this Chicago increase is unquestionably due to the increasing age of its population. This increase, however, is generally uniform from one decade to another. In 1850 only two per cent. of the population was over sixty years of age; in 1860 there was 2.6 per cent.; in 1870, 3.2 per cent.; in 1880, 3.6 per cent., and in 1890, 3.8 per cent. The rates of increase of this factor of the population in the successive decennial years over the proportion in 1850 were, therefore, 30 per cent. in 1860; 60 per cent. in 1870; 80 per cent. in 1880 and 90 per cent. in 1890.*

During the thirty years 1861-1890, inclusive, the death rates from pneumonia bear some relation to this rate of increase. In the decade 1861-1870 these deaths formed 3.9 per cent. of the total deaths from all causes; in the two succeeding decades they were respectively 5 and 6.7 per cent. of the total deaths. In the 1861-1870 decade they were at the rate of 92 deaths per 100,000 of population; in 1871-1880 at the rate of 107, and in 1881-1890 at the rate of 123 per 100,000.

But in the last decade, 1891-1900, these proportions rose to more than ten (10.2) per cent. of the total deaths from all causes (as against an average of 4.4 per cent. for the previous forty years),

* Wherever population figures are used in this article they are those of the United States Census in every instance—beginning with that of 1850. "Estimated population," population by State, School or City census, by directory publishers, by the "Two Million Club," et al., are disregarded for present purposes.

* Population by ages has not yet been furnished by the Census Office for 1900.

and to 180 (as against a previous average of 96 for the same period) per 100,000 of population. Compared with the immediately preceding decade, 1881-1890, there was an increase in the last decade of nearly forty-six (45.9) per cent. of pneumonia deaths in proportion to population, while the increase in the decade 1871-1880 was less than seventeen (16.5) per cent., and in the next decade, 1881-1890, it was less than sixteen (15.6) per cent.

On the basis of the proportion of pneumonia deaths to deaths from all causes the increase in the last decade over the previous one is 52.2 per cent. and over the average annual increase of the previous thirty years it is nearly sixty-eight (67.8) per cent. Obviously, the increasing pneumonia mortality of the last decade is not due solely nor chiefly to the increasing age of the population.

During this same period, 1891-1900, the death rate of consumption, which had steadily declined from 30.48 per 10,000 of population in 1851-1860 to 15.88 in 1881-1890, rose to 16.41 in the last decade—an increase of 3.3 per cent.; the bronchitis rate increased 8.4 per cent.; while the death rate from diseases of the heart and circulatory system increased 22 per cent.—or from 63 to 77 per 10,000 of population—and from nephritis nearly 85 per cent., or from 32 to 59 per 10,000 of population. Only the death rate from diseases of the nervous system, out of these five principal causes of death, shows a reduction during the last decade—to-wit: from 27 to 22 per 10,000 of population, a reduction of 18.5 per cent.

The rate of reduction in the general death rate, which had obtained during the previous forty years, also suffered a material check during this period. In the decade 1851-1860 the average annual death rate was 35.72 per thousand; from 1861 to 1870 it was 23.35 per thousand—a reduction of 34.6 per cent.; between 1871 and 1880 the rate was 21.16—a reduction of 9.4 per cent. from that of the previous decade; and between 1881 and 1900 the rate fell to 18.40—a further reduction of 13 per cent. The gross reduction during the forty years was a little more than 48 per cent. and the average reduction of each decade was 19 per cent. But between 1891 and 1900 there were 247,240 deaths in an average annual population of 1,399,212—an annual rate of 17.69 per thousand, and a reduction of only 3.8 per cent. from the rate of the immediately preceding decade, as against a minimum reduction of 9.4 per cent. and an average reduction of 19 per cent., in the three previous decades.

In October, 1889, the fourth great pandemic of influenza began

—"as others had done before, in some of the distant provinces of Russia, and by the beginning of November it had reached Moscow. By the middle of November Berlin was attacked. By the middle of December it was in London, and by the end of the month it had invaded New York and was widely distributed over the entire continent." Thus Osler; but even his graphic summary fails to convey an adequate idea of the rapidity of its march. First heard of in Central Asia in October, within two months it had caused death in Chicago, and within three months "it had reached its height in our city, at which time (the last week in January, 1890) my belief is that over 100,000 of our citizens were sufferers from that cause alone."*

From the single influenza death in December, 1889, the number rose to 64 in January, 1890, fell to 37 in February, rapidly dropped to 2, 7, 1 and 1 respectively in the next four months, after which there was a lull until January, 1891, when there were 4 more deaths, 6 in February, 155 in March, 120 in April, dropping to 23, 4, 1, 3, 2, 0, 2 and 16 respectively in the remaining months, with a total of 336 influenza deaths recorded during the year.

This actual mortality, however, very inadequately represents the import of epidemic influenza to the public health. Its baleful effects in the two years are more clearly seen in the following figures:

	1889.	1890.	1891.
Total deaths all causes.....	16,946	21,856	27,754
Rates per 1,000 of population..	18.11	19.87	23.92
Total deaths from pneumonia...	1,170	2,073	2,898
Rates per 10,000 of population.	12.5	18.8	25.0
Total deaths from consumption..	1,489	1,972	2,120
Rates per 10,000 of population.	15.9	17.9	18.3
Total deaths from bronchitis....	816	1,189	1,495
Rates per 10,000 of population.	8.7	10.8	12.9

The total deaths from all causes in 1891, the second influenza year, are the highest in number ever recorded in the history of the city up to date, and are nearly one-third greater in proportion to population than in 1889. The consumption death rate increased 15 per cent., the bronchitis rate one-half and the pneumonia rate exactly doubled in the two years. Deaths from nephritis and from

* Annual Report of the Department of Health for the year 1890. Swayne Wickersham, M. D., Commissioner of Health.

heart diseases also markedly increased, but not to the same extent as in the later years of the decade.*

There was a marked subsidence of the disease during 1892, in which year 103 deaths were referred to influenza—none during the last seven months—and it was hoped that the epidemic had ended; but there was a recrudescence in 1893, with 88 deaths in the latter year and 51 in the year 1894.

In the winter of 1894-1895 the Commissioner called attention to these facts, and suggested that, in view of the demonstration by Canon and Pfeiffer in 1892 of the microbial origin of the disease, its bacteriologic diagnosis was a matter of first importance, and especially so since influenza simulated so many other diseases. Physicians were invited to send specimens from the throats of suspected influenza patients to the laboratory for examination, and the department bacteriologists were requested to make a special study of the bacillus.

Owing to the subsidence of the disease in 1896 and 1897—when there were only 17 and 15 influenza deaths respectively—no opportunity was afforded for the proposed study, and interest in the subject died out. In the latter part of 1897, however, the disease reappeared and 21 deaths from influenza were recorded during the month of January, 1898. In the Department Bulletin for that month the following statement was published:

"Verified returns for the month of January, 1898, as compared with the corresponding month of 1897, show that there were 193 fewer deaths during the month, the respective totals being 2,026 and 1,833. The decrease is entirely among children under five years of age, of whom 888 died in January a year ago and only 605 in the corresponding month this year. This is a decrease of nearly one-third. On the other hand, the deaths among the middle-

* The permanent increase of consumption mortality, also, was not marked until 1894, the fifth year of the influenza period. During the previous seven years, 1887-1893, inclusive, the consumption mortality formed 8.5 per cent. of the total mortality, and was at the rate of 154 per 100,000 of population. From 1894 to 1900, inclusive, it formed 9.8 per cent. of the total—an increase of 15.5 per cent. in proportionate mortality—and was at the rate of 186 per 100,000 of population, an increase of 9 per cent. population proportion in the second seven-year period.

The cause of the delay in the increase of consumption mortality due to influenza, as compared with the increase of pneumonia, is obvious: The former disease is chronic, the latter acute. Lesions of the mucous membrane of the nose, throat and air passages in the prevailing catarrhal bronchitis of influenza and of the air cells in pneumonia permitted the invasion of the tubercle bacillus *de novo*, while the characteristic prostration of the disease and consequent impaired vital resistance favored the development and activity of latent bacilli already in the system. Even a mild attack of influenza has often been the starting point of a fatal attack of tuberculosis.

aged and beyond are in excess—an excess caused chiefly by chronic diseases, such as consumption, heart disease, Bright's disease, etc., to which must be added 21 deaths from *influenza* or *la grippe*, as against a total of 15 for the entire year 1897.

"Although this much-dreaded malady has not again spread with its usual rapidity nor yet assumed epidemic proportions in Chicago, the department is not entirely reassured as to its future. It it noted that in London, Rome and in certain places in France, where the disease has been sporadic for some time past, it is becoming epidemic and in some cases is assuming a gravity which is very alarming.

"These considerations led the Commissioner to make the following statement to the public toward the close of the month:

" 'After a period of unprecedented good health and low death rate, Chicago is threatened with an epidemic visitation of one of the diseases most dreaded by sanitarians. Against influenza or *la grippe* the preventive measures of sanitation and public hygiene are powerless. As a recent writer says:* 'We can see it afar off and trace its progress, but can do nothing to stop it; and it smites the sanitarily pure with a severity on the whole much the same as it shows to the rest of the world.' The Department has been anxiously watching its progress in this city for several weeks, hoping that there might be some mistake in the diagnosis, since it so closely resembles some other diseases. But this hope was swept away by the reports of eight deaths from the 'strange and terrible disease' during the last three days of the week just closed (January 22d). These were reported by physicians of such eminence and experience as to leave no room for doubt. Three of the deaths were from the uncomplicated form of the diseace, but the remaining five showed the characteristic malignant activity of the poison in fatal complications of pneumonia, apoplexy and nephritis.

" 'The last epidemic of this disease in Chicago was a chief factor in increasing the total deaths from 21,856 in 1890 to 27,754 in the epidemic year, 1891—in increase of more than one-fifth—and numbers of the survivors have never since regained their former condition of mental and physical health. This added terror of the disease makes it all the more important that nothing should be neglected which may tend to its restriction, and to this end the

* The quotations that follow are from the article "Influenza" in Allbutt's "System of Medicine," by J. F. Goodhart, M. D., M. C., F. R. C. P., Physician to Guy's Hospital, London, Eng., etc.

Commissioner points out that influenza or the 'grip' is a germ disease, and therefore contagious. Hence the obvious thing to do is to follow the advice of the authorities: Keep out of the way of contagion.

" 'Where strict isolation has been possible, as in certain institutions, the disease has seldom appeared; most risk of catching the disease is run in public buildings or ill-ventilated rooms of any sort, a street car or railway carriage with closed windows not excepted. By keeping out of the way of the contagion is meant, among other things, avoiding close contact with one suffering from the disease; do not sleep in the same room, still less in the same bed, with such a sufferer, and do not use any article or utensil in common with such.

" 'It is also certain that all kinds of excesses in living, as well as exposure and fatigue, invite attacks of the disease. "All observers have testified to its frequency and to its heavy mortality, in the alcoholic particularly, and also in the over-worked and harassed." They are further agreed that self-dosing with so-called "influenza cures" and specifics is not only useless but positively dangerous; and that mildness of attack and speedy recovery are best insured by taking to bed at once and following the advice of a competent physician. "It is the worst folly to struggle on with work and to attempt to fight the disease—a plan that, although some came through successfully (in the past epidemic), was nevertheless the cause of the loss of many lives." This is of special importance to those beyond middle age with crippled hearts, kidneys or other vital organs.

" 'In some respects influenza resembles consumption in its mode of propagation; therefore, the same precautions with regard to the secretions from the nose, mouth and throat should be observed. These secretions literally teem with the influenza bacillus, and they should be immediately destroyed or thoroughly disinfected under the advice of the attending physician. The rooms, bedding, clothing, etc., of influenza patients should also be thoroughly disinfected, and the Department will perform such disinfection whenever notified.

" 'Thus far the diagnosis of influenza in Chicago rests entirely upon the clinical symptoms. Only a very few specimens of the throat secretions or the expectorate of alleged influenza patients have been sent to the laboratory in response to the invitation of the Commissioner, and microscopic examination of these has thus far failed to reveal the presence of the Canon-Pfeiffer bacillus, in

any instance. Yet Kamen reports failing to find the influenza germ in only one case out of a hundred examined. The Commissioner renews his request to physicians attending influenza patients to send specimens of the throat secretions and expectorate of their patients either to the main laboratory or to any of the sub-laboratories, where they will be put under the microscope at once and the result of the examination telephoned without delay.' "

It was not, however, until the early part of the following December (1898) that the influenza bacillus was first identified in the Department laboratory, and then only in examinations of suspected diphtheria—no specimens from influenza cases having been received. Once identified the organism was found with increasing frequency and, in the Department Bulletin for January, 1899, Dr. Wynekoop, Assistant Bacteriologist in charge of bacterial diagnosis, contributed the results of his study of upward of a hundred examinations and demonstrated the feasibility—through certain improvements in technique—of the bacteriologic diagnosis of influenza with as much certainty and as promptly as diphtheria is diagnosed. Since that time, December, 1898, the search for the Canon-Pfeiffer bacillus has been as much a part of the routine of that branch of the laboratory work as is the identification of the Klebs-Loeffler, the Eberth, the Koch, or the diplococcus of Class.

The germ has now been found in uncomplicated influenza, in bronchitis, conjunctivitis, consumption, diarrheal disease, diphtheria, empyema, edocarditis, meningitis, nephritis, otitis media, parotitis, pneumonia, scarlet fever, tonsillitis and whooping cough; and also in cases simulating cerebro-spinal fever, lumbago, rheumatic fever and typhoid fever.

What this pestilent organism is capable of doing, how protean its manifestations, and how mischievously puzzling the strictly clinical diagnosis—may be seen in the following:

"About February 10th ult. (1899) a boy of seven suddenly became ill with a chill of short duration, followed by headache and a temperature of 103.4° F. For a number of days prior to the chill there had been a condition closely resembling typhoid—general languor, loss of appetite, coated tongue, constipation, slight headache, nose-bleed and a slight cough. The second day following the chill the temperature rose to 105.6° F. and the pulse to 160. There were delirium, stupor and slight convulsions—symptoms suggestive of meningitis, but which could not be interpreted as such in the absence of any muscular rigidity. The temperature

continued near 105° F. another twenty-four hours, when a slight erythema appeared over parts of the body.

"A consultation was called, but a positive diagnosis was not made. Scarlet fever with a delayed rash was suggested, and a hot pack ordered with the hope of bringing out the rash should this be the nature of the disease. The results were negative. A microscopic examination was then made of the contents of the throat, and the presence of great numbers of influenza bacilli was revealed.

"The child was now treated for influenza with prompt and decided improvement, the temperature falling to 102-101° F., and the pulse to 120-116. The cough continued, however, and became more harsh and distressing. No involvement of the lungs or pleura could be discovered at this time,

"During the following two weeks the typhoid symptoms continued. Temperature varied from 100 to 103° F.; cough less pronounced; intestines greatly distended with gas; iliac tenderness and stools of a typhoid character. The nervous symptoms, however, were not those of typhoid, the child being supersensitive to the touch, and exhibiting an abnormally active mental condition. A consulting physician was again called in, who made a tentative diagnosis of typhoid fever complicated by influenza. Widal's test was made on several occasions, but at no time was a satisfactory reaction obtained. What seemed to be a partial reaction about the eighteenth day could not be obtained later. Bacteriologic examinations were made of the stools, and, after several attempts, the influenza organism was isolated, which would lead to the conclusion that this organism alone was responsible for the intestinal symptoms. On the tongue there were several small ulcers and similar patches were noticed on the mucous membrane of the lips and cheeks.

"During the second week the Eustachian tubes became affected, and later the cavities of the middle ear. The otitis media ran the usual course. Pus examined at the time of the rupture of the tympanum contained the influenza bacillus, and cultures made from the discharge revealed the organism present in a pure condition. In cultures examined at a later period there were found strepticocci. The intestinal symptoms disappeared during the third week and the stools became normal, but the temperature, which for several days had been in the neighborhood of 100° F., began to rise a little each day, and respiration became more rapid. This condition was found to be due to an involvement of the right pleura. Fluid began to accumulate and soon the entire chest cavity of the affected

side was filled. Aspiration demonstrated the presence of pus. Microscopic examinations made of the aspirated fluid revealed the influenza organism. Small portions of the pus were transferred to blood serum and cultures obtained in which the bacillus in question was found in a pure state."*

Influenza has, apparently, become domesticated with us, and its baleful effects on the public health are sufficiently shown in the foregoing facts and figures. Its early recognition is the necessary first step to any restriction of its spread—to say nothing of its scientific medical treatment. Laboratory facilities for such recognition are not adequately utilized—the profession, as a whole, manifesting a singular indifference to the opportunities offered.

Before the recent recrudescence the bacillus was detected in the Department laboratory in October, 1900, but it was not until deaths from the disease had occurred in the following December that any demand was made for examinations. Meanwhile, no precautions against a contagion which spreads with almost lightning-like rapidity were enforced—they were not enforced because the disease, and consequently the necessity for precautions, was not recognized.

The way to fight influenza is through the culture tube and the microscope.

SANITARY JUSTICE AT ALBION.

Dr. B. E. Miller, Secretary Noble County Board of Health, reports to the State Board of Health as follows:

"Mr. F. L. Gandy, a wealthy farmer of Green Township, this county, had a young heifer, advanced about five months in pregnancy, that took sick, suffering great pain and bloating. Treatment by one or two neighbors and himself with medicines and plunging a knife in the flank failed to relieve, and death ensued. The throat of the dead animal was cut, but it failed to bleed freely, as a healthy animal should. After skinning and dressing, the carcass was peddled by Mr. Gandy to his neighbors. No sickness resulted from eating the meat, but those who purchased and others who heard of the circumstances became indignant, and arrest and prosecution were made. The case was decided against Gandy and a fine of $50 imposed and collected. This kind of thrift will hereafter be less frequently practiced in Noble County.—Indiana "Medical Journal."

* "Further Study of the Influenza Bacillus." Monthly Bulletin, Department of Health, Chicago, March, 1899.

THE ETIOLOGY OF YELLOW FEVER.

Yellow fever produced by the bite of Culex fasciatus.

AN ADDITIONAL NOTE.*

By WALTER REED, M. D., Surgeon, United States Army, JAS. CARROLL, M. D., and ARISTIDES AGRAMONTE, M. D., Acting Assistant Surgeons, United States Army.

At the Twenty-eighth Annual Meeting of the American Public Health Association,† held in Indianapolis, Ind., October 22-26, 1900, we presented, in the form of a Preliminary Note, the results of our bacteriologic study of yellow fever, based on cultures taken from the blood in eighteen cases, at various stages of the disease, as well as on those which we had made from the blood and organs of eleven yellow fever cadavers. We also recorded the results obtained from the inoculation of eleven non-immune individuals by means of the bite of mosquitoes (*culex fasciatus*, Fabr.) that had previously fed on the blood of patients sick with yellow fever. We were able to report two positive results, in which the attack of yellow fever followed the bite of a mosquito within the usual period of incubation of this disease.

In one of these cases all other sources of infection could be positively excluded. From our several observations we drew the following conclusions: 1. Bacillus icteroides (*Sanarelli*) stands in no causative relation to yellow fever, but, when present, should be considered as a secondary invader in this disease. 2. The mosquito serves as the intermediate host for the parasite of yellow fever. Since the publication of our Preliminary Note, we have continued our investigations, especially as regards the means by which yellow fever is propagated from individual to individual, and as to the manner in which houses become infected with the contagium of this disease. The results already obtained are so positive and striking that, with the permission of Surgeon-General Sternberg, we have concluded to present to this Congress an Additional Note, in which we will record these later observations. We desire to here express our sincere thanks to the Military Governor of the Island of Cuba, Major-General Leonard Wood, U. S. V.,

* Abstract of paper read at the Pan-Am. Med. Cong., held in Havana, Cuba, Feb. 4-7, 1901. "Journal of American Medical Association."
† Phila. Med. Jour., Oct. 27, 1900.

without whose approval and assistance these observations could not have been carried out.

In order to exercise perfect control over the movements of those individuals who were to be subjected to experimentation, and to avoid any other possible source of infection, a location was selected in an open and uncultivated field, about one mile from the town of Quemados, Cuba. Here an experimental sanitary station was established under the complete control of the senior member of this board. This station was named Camp Lazear, in honor of our late colleague, Dr. Jesse W. Lazear, Acting Assistant-Surgeon, U. S. A., who died of yellow fever, while courageously investigating the causation of this disease. The site selected was well drained, freely exposed to sunlight and winds, and, from every point of view, satisfactory for the purposes intended.

The personnel of this camp consisted of two medical officers, Dr. Roger P. Ames, Acting Assistant-Surgeon, U. S. A., an immune, in immediate charge; Dr. R. P. Cooke, Acting Assistant-Surgeon, U. S. A., non-immune; one acting hospital steward, an immune; nine privates of the hospital corps, one of whom was immune, and one immune ambulance driver.

For the quartering of this detachment, and of such non-immune individuals as should be received for experimentation, hospital tents, properly floored, were provided. These were placed at a distance of about twenty feet from each other, and were numbered 1 to 7 respectively.

Camp Lazear was established November 20, 1900, and from this date was strictly quarantined, no one being permitted to leave or enter camp except the three immune members of the detachment and the members of the Board. Supplies were drawn chiefly from Columbia Barracks, and for this purpose a conveyance under the control of an immune acting hospital steward, and having an immune driver, was used.

A few Spanish immigrants recently arrived at the Port of Havana were received at Camp Lazear, from time to time, while these observations were being carried out. A non-immune person, having once left this camp, was not permitted to return to it under any circumstances whatever.

The temperature and pulse of all non-immune residents were carefully recorded three times a day. Under these circumstances any infected individual entering the camp could be promptly detected and removed. As a matter of fact only two persons, not

the subject of experimentation, developed any rise of temperature; one, a Spanish immigrant, with probable commencing pulmonary tuberculosis, who was discharged at the end of three days; and the other, a Spanish immigrant, who developed a temperature of 102.6° F. on the afternoon of his fourth day in camp. He was at once removed with his entire bedding and baggage and placed in the receiving ward at Columbia Barracks. His fever, which was marked by daily intermissions for three days, subsided upon the administration of cathartics and enemata. His attack was considered to be due to intestinal irritation. He was not permitted, however, to return to the camp.

No non-immune resident was subjected to inoculation who had not passed in this camp the full period of incubation of yellow fever, with one exception, to be hereinafter mentioned.

I.

Having thus sufficiently indicated the environment of Camp Lazear and the conditions under which its residents lived, we will now proceed to a narration of the observations thus far made at this experimental station. At the time these inoculations were begun, the several tents were occupied as follows: Tent No. 1 by 1 immune and 1 non-immune; No. 2 by 1 immune and 2 non-immunes; No. 3 by 2 immunes; No. 4 by 3 non-immunes; No. 5 by 3 non-immunes; No. 6 by 2 non-immunes, and No. 7 by 1 non-immune.

For the purpose of experimentation subjects were selected as follows: From Tent No. 2, two non-immunes, and from Tent No. 3, three non-immunes. Later, one non-immune in Tent No. 6 was also designated for inoculation.

CASE 1.—Private John R. Kissinger, Hospital Corps, U. S. A., aged 23, a non-immune, occupant of Tent No. 2, with his full consent, was bitten at 10.30 a. m., November 20, 1900, by a mosquito (*C. fasciatus*) that had bitten a severe case of yellow fever on the fifth day, eleven days previously; another severe case on the third day, six days before, and a third severe case on the third day, three days before. As Kissinger had not absented himself from Columbia Barracks for a period of more than thirty days, it was considered safe to inoculate him without waiting for his period of incubation to pass.

November 23, 1900, Kissinger was again bitten by the same mosquito. The result of both inoculations was negative. The

mosquito, therefore, was incapable of conveying any infection on the eleventh or fourteenth day after it had bitten a severe case of yellow fever on the third day of the disease. This insect had been kept at ordinary room temperature and died November 26, 1900.

December 5, 1900, at 2 p. m., twelve days after the last inoculation, Kissinger was again bitten by five mosquitoes (*C. fasciatus*), two of which had bitten fatal cases of yellow fever on the second day, fifteen days before; one a severe case on the second day, nineteen days previously, and two a mild case on the third day, twenty-one days before.

The record of temperature and pulse, taken every three hours, following this inoculation, showed that the subject remained in his usual state of health during the following three days, except that on December 8th, on the third day, Kissinger had slight vertigo, upon rising, which soon passed away. At 4.30 p. m.—commencement of fourth day—he complained of frontal headache; otherwise he felt well and partook of supper with appetite; at 9. p. m., temperature 98.4° F., pulse 90; at 11.30 p. m. he awoke with a chill, temperature 100° F., pulse 90; he complained of severe frontal headache and backache; his eyes were injected and his face suffused. December 9th at 3 a. m., his temperature was 102° F., pulse 102; he had violent headache and backache with nausea and vomiting. He was then removed to the yellow fever wards. His subsequent history was that of a case of yellow fever of moderate severity. Albumin appeared in the urine on the fourth day, increased to one-fifth by volume on the sixth day and disappeared on December 22d. Granular casts were present in considerable numbers from the fourth to the eighth day. The conjunctivæ were jaundiced on the third day. The diagnosis of yellow fever in this case was made by Drs. Juan Guitéras, Carlos Finlay, W. C. Gorgas, and A. Diaz Albertini, the board of yellow fever experts of the city of Havana, who saw the patient on several occasions during his illness. The period of incubation in this case was 3 days, 9½ hours.

CASE 2.—John J. Moran, aged 24, an American, non-immune occupant of Tent No. 2, with his full consent, was bitten at 10 a. m., November 26, 1900, by a mosquito (*C. fasciatus*) which twelve days before had bitten a case of yellow fever of moderate severity, on the third day of the disease. This insect had also bitten a well-marked case of yellow fever (second day) ten days previously.

November 29th, at 2.20 p. m., Moran was again bitten by the same mosquito. The result of both of these inoculations was nega-

tive. This insect was, therefore, incapable of conveying the infection fifteen days after having bitten a case of yellow fever of moderate severity on the third day, and thirteen days after it had bitten a well-marked case of this disease on the second day. This mosquito had been kept at room temperature. Moran's case will be again referred to when we come to speak of the infection of a building by means of contaminated mosquitoes.

CASE 3.— A Spanish immigrant, aged 26, a non-immune occupant of Tent No. 5, with his full consent, was bitten at 4 p. m., December 8, 1900, by four mosquitoes (*C. fasciatus*) which had been contaminated as follows: one by biting a fatal case of yellow fever on the third day, seventeen days before; one a severe one, on the third day, eighteen days before; one a severe case on the second day, twenty-two days before, and one a case of moderate severity on the third day, twenty-four days previously.

The record of temperature and pulse, taken every three hours after the inoculation, shows no rise of temperature above 99° F. until 6 p. m., December 13th (sixth day), when 99.4° F. is recorded; pulse 68. The subject, who was of a very lively disposition, retained his usual spirits until noon of the 13th, although he complained of slight frontal headache on the 11th and 12th. He took to his bed at noon of the 13th (fifth day), complaining of increased frontal headache and a sense of fatigue. At 9 p. m. his temperature was 98.2° F., pulse 62.

December 14th, at 6 a. m., temperature was 98° F., pulse 72, and he still complained of frontal headache and general malaise. Profuse epistaxis occurred at 7.45 a. m.; at 9 a. m., temperature 99.6° F., pulse 80; 1.15 p. m., temperature 100° F., pulse 80; he complained of a sense of chilliness, with frontal headache increased, and slight pain in the back, arms and legs; 3 p. m., temperature 100° F., pulse 80; 4.15 p. m., temperature 100.7° F., pulse 68; his face was flushed and eyes congested. He was removed to the yellow fever wards. A trace of albumin was found in the urine passed at 3.30 p. m., December 15th; a few hyaline casts were also present. He was seen at this time by the Havana board of experts and the diagnosis of mild yellow fever confirmed.

The period of incubation in this case was four days and twenty hours, counting from the time of inoculation to the hour when the patient took to his bed; if reckoned to the onset of fever, it was five days and seventeen hours.

CASE 4.—A Spanish immigrant, aged 27, a non-immune occupant of Tent No. 5, with his full consent, was bitten at 10 a. m.,

November 26, 1900, by a mosquito (*C. fasciatus*) which had bitten a severe case of yellow fever, on the second day, ten days before. Three days later, November 29, he was again bitten by the same insect. December 2d, after an interval of three days, he was again bitten by the same insect, and also by a second mosquito (*C. fasciatus*), which, twelve days before, had been contaminated by biting a fatal case of yellow fever on the third day. No unfavorable effects followed any of these attempted inoculations. The first-mentioned mosquito, therefore, was incapable of conveying any infection on the seventeenth day after biting a severe case of yellow fever on the second day; the other also failed to infect on the twelfth day after biting a fatal case of yellow fever on the third day. Both of these mosquitoes had been kept at ordinary room temperature.

December 9th, after an interval of seven days, the subject was again bitten, at 10.30 a. m., by one mosquito (*C. fasciatus*), which had been infected nineteen days before by biting a fatal case of yellow fever on the second day of the disease. He remained in his usual health until 9 a. m., December 12th (third day), when he complained of frontal headache; his temperature was 98.8° F., pulse 96. This headache continued during the entire day. At 6 p. m., temperature was 99° F., pulse 94; 9 p. m., temperature 99° F., pulse 84; 9.30 p. m., temperature 99.4° F., pulse 82. Severe headache and backache was complained of; his eyes were injected and his face suffused. The following morning he was sent to the yellow fever wards. Urine passed at 4.20 p. m., December 15th, the third day, gave a distinct trace of albumin. Many hyaline casts were present on the same date. The conjunctivæ were jaundiced on the third day.

The patient was seen by the board of experts on December 14th, and the diagnosis of yellow fever made.

The period of incubation in this case was 3 days, 11½ hours.

CASE 5.— A Spanish immigrant, aged 26, a non-immune occupant of Tent No. 5, with his full consent, was bitten at 10 a. m., November 26, 1900, by a mosquito (*C. fasciatus*) that had bitten a well-marked case of yellow fever, on the third day, twelve days before. November 29th he was again bitten by the same insect. December 2d he was for the third time bitten by two mosquitoes (*C. fasciatus*) both of which had bitten a well-marked case of yellow fever, on the third day, eighteen days before. As no bad results followed any of these inoculations, it follows that these mos-

quitoes were incapable of conveying any infection eighteen days after they had bitten a well-marked case of yellow fever on the third day. Both of these insects had been kept at room temperature.

December 11th, after an interval of nine days, the subject was again, at 4.30 p. m., bitten by the same mosquitoes, four in number, that had been applied to Case 3 three days prior to this time, with positive results.

The record of temperature and pulse, taken every three hours following the inoculation, showed no change till December 13th (second day), at 9 a. m., when the temperature was 99° F.; and the pulse 78. From this hour till 6 p. m. the temperature varied from 99.2 to 99.6° F. The subject complained of frontal headache, slight in degree, during the entire day. At 9 p. m. his temperature was 98.4° F., pulse 62.

December 14th (third day), he complained of slight frontal headache during the entire day, and was indisposed to exertion. From 6 a. m. to 6 p. m. the temperature averaged 99.2° F., and the pulse varied from 64 to 90; at 9 p. m. it was 98.4° F., pulse 78. December 15th (fourth day), at 6 a. m., temperature was 98.2° F., pulse 78. He still had frontal headache. At 9 a. m., temperature was 99.2° F., pulse 80; at 12, noon, the former was 99.2 F., pulse 74. The subject now went to bed, complaining of headache and pains throughout the body. At 2 p. m. the temperature was 100° F., pulse 80; eyes much congested, face flushed. At 6 p. m. his temperature had risen to 102° F., and the pulse to 90. He was then transferred to the yellow fever wards. Albumin appeared in the urine at 7.30 a. m., December 17th. Bleeding from the gums and roof of the mouth occurred on the sixth and seventh days of his illness.

This case was examined by the board of experts on the 16th and 19th, and the diagnosis of yellow fever made.

Albumin disappeared on the sixth day, the temperature falling to normal on this date, and remaining near this point till December 23d, the ninth day of sickness, when a relapse occurred, attended with bleeding from the gums on December 24th and 25th, with the appearance of red blood cells and pus cells in the urine in moderate numbers. Fever subsided on December 26th, and the urine became normal on December 29th.

The period of incubation in this case, if reckoned from the time of inoculation to the hour when the patient took to his bed, was 3 days 19½ hours.

The four patients whose histories we have given above were also examined by a number of physicians of Havana, among whom we may mention Dr. Bango, of "La Covadonga," Dr. Sanchez, of "La Benéfica," and Dr. Moas, of "La Purissima Concepcion," by all of whom the diagnosis of yellow fever was confirmed.

Let us now rapidly review the circumstances attending these cases of experimental yellow fever, in order to emphasize certain points of interest and importance in connection with their occurrence. (We omit any reference to the clinical histories.)

It should be borne in mind that at the time when these inoculations were begun there were only 12 non-immune residents at Camp Lazear, and that 5 of these were selected for experiment, viz., 2 in Tent No. 2, and 3 in Tent No. 5. Of these we succeeded in infecting 4, viz., 1 in Tent No. 2 and 3 in Tent No. 5, each of whom developed an attack of yellow fever within the period of incubation of this disease. The one negative result, therefore, was in Case 2—Moran—inoculated with a mosquito on the fifteenth day after the insect had bitten a case of yellow fever on the third day. Since this mosquito failed to infect Case 4, three days after it had bitten Moran, it follows that the result could not have been otherwise than negative in the latter case. We now know, as the result of our observations, that in the case of an insect kept at room temperature during the cool weather of November, fifteen or even eighteen days would, in all probability, be too short a time to render it capable of producing the disease.

As bearing upon the source of infection, we invite attention to the period of time during which the subjects had been kept under rigid quarantine, prior to successful inoculation, which was as follows: Case 1, fifteen days; Case 3, nine days; Case 4, nineteen days; Case 5, twenty-one days. We further desire to emphasize the fact that this epidemic of yellow fever, which affected 33.33 per cent. of the non-immune residents of Camp Lazear, did not concern the 7 non-immunes occupying Tents Nos. 1, 4, 6 and 7, *but was strictly limited to those individuals who had been bitten by contaminated mosquitoes.*

Nothing could point more forcibly to the source of this infection than the order of the occurrence of events at this camp. The precision with which the infection of the individual followed the bite of the mosquito left nothing to be desired in order to fulfill the requirements of a scientific experiment.

The epidemic having ceased on December 15, 1900, no other case of yellow fever occurred in this camp until we again began to ex-

pose individuals to inoculation. Thus fifteen days later we made the following observation:

CASE 6.— A Spanish immigrant, aged 27, a non-immune occupant of Tent No. 6, with his full consent, was bitten at 11 a. m., December 30, 1900, by four mosquitoes (*C. fasciatus*) that had been contaminated seventeen days previously by biting a mild case of yellow fever on the first day of the disease (Case 4). These insects had been kept at a temperature of 82° F.

The subject remained in his normal condition until the evening of January 2, 1901, the third day, when he complained of frontal headache. At 6 p. m. his temperature was 99° F., pulse 64. He slept well, but still complained of headache on the following morning, January 3d. He partook sparingly of breakfast, and afterward lay on his bed, being disinclined to exert himself. At 9 a. m. the temperature was 99° F., pulse 96; 10.30 a. m., temperature 100° F., pulse 80. A sense of chilliness and sharp frontal headache were complained of. At 3 p. m. his temperature was 100.8° F., pulse 80; his eyes were congested and face flushed. He was removed to the yellow fever wards. A specimen or urine passed at midnight, January 4th, contained a distinct trace of albumin. Slight bleeding from the gums occurred on the fifth and sixth days. The patient was seen by the board of experts on the second and seventh days of his attack, and the diagnosis of yellow fever confirmed.

The period of incubation in this case was three days 22½ hours. The subject had remained in strict quarantine for twenty-two days preceding his inoculation.

In considering the character of the attacks and the course of the disease in these five cases of experimental yellow fever, it must be borne in mind that these infected individuals were all young men, in good general physical condition, and placed amid excellent hygienic surroundings. Further, it must not be forgotten that, upon the earliest manifestation of an approaching infection, they were each and all put to bed at once, and were even carried to the yellow fever wards while occupying the same bed. In other words, these men were kept at absolute rest from the first inception of the disease. Just what bearing this may have had on the subsequent course of the fever, we cannot say, but since so much stress is laid on absolute rest of the patient by those having most experience in the treatment of yellow fever, the influence of this enforced rest, in our cases, upon the subsequent course of the attack, was doubt-

less of much importance. We reserve a consideration of the clinical side of these cases for a future report.

In our opinion the experiments above described conclusively demonstrate that an attack of yellow fever may be readily induced in the healthy subject by the bite of mosquitoes (*C. fasciatus*) which have been previously contaminated by being fed with the blood of those sick with yellow fever, provided the insects are kept for a sufficient length of time after contamination before being applied to the person to be infected.

Our observations do not confirm Finlay's statement that the bite of the mosquito may confer an abortive attack of yellow fever, when applied to the healthy subject two to six days after it has bitten a yellow fever patient. We have always failed to induce an attack, even of the mildest description, when we have used mosquitoes within less than twelve days from the time of contamination, although the insects were constantly kept at summer temperature. We could cite instances where we have applied mosquitoes at intervals of two, three, four, five, six, nine and eleven days following the contamination of the insect with the blood of well-marked cases of yellow fever, early in the disease, without any effect whatever being produced by the bite. Thus in one case no result followed the bite of fourteen mosquitoes which four days previously had been contaminated by biting a case of yellow fever on the first day. Again, seven days later, or eleven days after contamination, the surviving seven of these insects failed to infect an individual. On the seventeenth day after contamination, however, the bite of four of these mosquitoes—all that remained of the original fourteen—was promptly followed by an attack of yellow fever in the same individual. These insects had been kept, during the whole of this time, at an average temperature of 82° F.

Our observations would seem to indicate that after the parasite has been taken into the mosquito's stomach, a certain number of days must elapse before the insect is capable of re-conveying it to man. This period doubtless represents the time required for the parasite to pass from the insect's stomach to its salivary glands, and would appear to be about twelve days in summer weather, and most probably about eighteen or more days during the cooler winter months. It follows, also, that our observations do not confirm Finlay's opinion that the bite of the contaminated mosquito without producing the disease may confer immunity against a subsequent attack of yellow fever. In our experience, an individual may be bitten on three or more occasions by contaminated mos-

quitoes without manifesting any symptoms of disturbance to health, and yet promptly sicken with yellow fever within a few days after being bitten by an insect capable of conveying the infection.

II.

Having shown that yellow fever can be conveyed by the bite of an infected mosquito, it remains to inquire whether this disease can be acquired in any other manner. It has seemed to us that yellow fever, like the several types of malarial fever, might be induced by the injection of blood taken from the general circulation of a patient suffering with this disease. Accordingly we have subjected four individuals to this method of infection, with one negative and three positive results. Reserving the detailed description of these cases to a subsequent occasion, we may state that in one of the positive cases an attack of pronounced yellow fever followed the subcutaneous injection of 2 c.c. of blood taken from a vein at the bend of the elbow, on the first day of the disease, the period of incubation being three days and twenty-two hours; in the second case, 1.5 c.c. of blood, taken on the first day of the disease, and injected in the same manner, brought about an attack within two days and twelve hours; while in our third case, the injection of 0.5 c.c. of blood taken on the second day of the disease, produced an attack at the end of forty-one hours.

In the case mentioned as negative to the blood injection, the subsequent inoculation of this individual with mosquitoes already proved to be capable of conveying the disease, also resulted negatively. We think, therefore, that this particular individual, a Spanish immigrant, may be considered as one who probably possesses a natural immunity to yellow fever.

It is important to note that in the three cases in which the injection of the blood brought about an attack of yellow fever, careful cultures from the same blood, taken immediately after injection, failed to show the presence of Sanarelli's bacillus.*

Our observations, therefore, show that the parasite of yellow fever is present in the general and capillary circulation, at least

* A fourth case of yellow fever, severe in type, has been produced by the subcutaneous injection of 1 c.c. of blood taken from the general circulation on the second day of the disease, the period of incubation being three days and one hour. The patient from whom the blood was obtained was an experimental case which was in turn produced by the injection of blood—0.5 c.c. —derived from a non-experimental case of fatal yellow fever. As "controls," Cases 1, 4, 6 and 7 of this report were also injected subcutaneously with 1 c.c. of the same blood without manifesting any symptoms whatever. The blood which produced this fourth case of yellow fever, when transferred at the same time to bouillon tubes in considerable quantities, gave no growth whatever.

during the early stages of this disease, and that the latter may be produced, like malarial fever, either by means of the bite of the mosquito or by the injection of blood taken from the general circulation.

III.

Can yellow fever be propagated in any other way?

We believe that the general consensus of opinion both of the medical profession and of the laity is strongly in favor of the conveyance of yellow fever by fomites. The origin of epidemics, devastating in their course, has been frequently attributed to the unpacking of trunks and boxes that contained supposedly infected clothing; and hence the efforts of health authorities, both State and national, are being constantly directed to the thorough disinfection of all clothing and bedding shipped from ports where yellow fever prevails. To such extremes have efforts at disinfection been carried, in order to prevent the importation of this disease into the United States, that, during the epidemic season, all articles of personal apparel and bedding have been subjected to disinfection, sometimes both at the port of departure and at the port of arrival; and this has been done whether the articles have previously been contaminated by contact with yellow fever patients or not. The mere fact that the individual has resided, even for a day, in a city where yellow fever is present, has been sufficient cause to subject his baggage to rigid disinfection by the sanitary authorities.

To determine, therefore, whether clothing and bedding which have been contaminated by contact with yellow fever patients and their discharges can convey this disease is a matter of the utmost importance. Although the literature contains many references to the failure of such contaminated articles to cause the disease, we have considered it advisable to test, by actual experiment on non-immune human beings, the theory of the conveyance of yellow fever by fomites, since we know of no other way in which this question can ever be finally determined.

For this purpose there was erected at Camp Lazear a small frame house consisting of one room 14 x 20 feet, and known as "Building No. 1," or the "Infected Clothing and Bedding Building." The cubic capacity of this house was 2,800 feet. It was tightly ceiled within with "tongue and grooved" boards, and was well battened on the outside. It faced to the south and was provided with two small windows, each 26 x 34 inches in size. These windows were both placed on the south side of the building, the purpose

being to prevent, as much as possible, any thorough circulation of the air within the house. They were closed by permanent wire screens of .5 mm. mesh. In addition sliding glass sash were provided within and heavy wooden shutters without; the latter intended to prevent the entrance of sunlight into the building, as it was not deemed desirable that the disinfecting qualities of sunlight, direct or diffused, should at any time be exerted on the articles of clothing contained within this room. Entrance was effected through a small vestibule, 3 x 5 feet, also placed on the southern side of the house. This vestibule was protected without by a solid door and was divided in its middle by a wire screen door, swung on spring hinges. The inner entrance was also closed by a second wire screen door. In this way the passage of mosquitoes into this room was effectually excluded. During the day, and until after sunset, the house was kept securely closed, while by means of a suitable heating apparatus the temperature was raised to 92 or 95° F. Precaution was taken at the same time to maintain a sufficient humidity of the atmosphere. The average temperature of this house was thus kept at 76.2° F. for a period of sixty-three days.

November 30, 1900, the building now being ready for occupancy, three large boxes filled with sheets, pillow-slips, blankets, etc., contaminated by contact with cases of yellow fever and their discharges were received and placed therein. The majority of the articles had been taken from the beds of patients sick with yellow fever at Las Animas Hospital, Havana, or at Columbia Barracks. Many of them had been purposely soiled with a liberal quantity of black vomit, urine, and fecal matter. A dirty "comfortable" and much-soiled pair of blankets, removed from the bed of a patient sick with yellow fever in the town of Quemados, were contained in one of these boxes. The same day, at 6 p. m., Dr. R. P. Cooke, Acting Assistant-Surgeon, U. S. A., and two privates of the hospital corps, all non-immune young Americans, entered this building and deliberately unpacked these boxes, which had been tightly closed and locked for a period of two weeks. They were careful at the same time to give each article a thorough handling and shaking in order to disseminate through the air of the room the specific agent of yellow fever, if contained in these fomites. These soiled sheets, pillow-cases and blankets were used in preparing the beds in which the members of the hospital corps slept. Various soiled articles were hung around the room and placed about the bed occupied by Dr. Cooke.

From this date until December 19, 1900, a period of twenty days, this room was occupied each night by these three non-immunes. Each morning the various soiled articles were carefully packed in the aforesaid boxes, and at night again unpacked and distributed about the room. During the day the residents of this house were permitted to occupy a tent pitched in the immediate vicinity, but were kept in strict quarantine.

December 12th a fourth box of clothing and bedding was received from Las Animas Hospital. These articles had been used on the beds of yellow fever patients, but in addition had been purposely soiled with the bloody stools of a fatal case of this disease. As this box had been packed for a number of days, when opened and unpacked by Dr. Cooke and his assistants, on December 12th, the odor was so offensive as to compel them to retreat from the house. They pluckily returned, however, within a short time, and spent the night as usual.

December 19th these three non-immunes were placed in quarantine for five days and then given the liberty of the camp. All had remained in perfect health, notwithstanding their stay of twenty nights amid such unwholesome surroundings.

During the week December 20-27th, the following articles were also placed in this house, viz.: pajamas suits, 1; undershirts, 2; night-shirts, 4; pillow-slips, 4; sheets, 6; blankets, 5; pillows, 2; mattresses, 1. These articles had been removed from the persons and beds of four patients sick with yellow fever and were very much soiled, as any change of clothing or bed-linen during their attacks had been purposely avoided, the object being to obtain articles as thoroughly contaminated as possible.

From December 21, 1900, till January 10, 1901, this building was again occupied by two non-immune young Americans, under the same conditions as the preceding occupants, except that these men slept every night in the very garments worn by yellow fever patients throughout their entire attacks, besides making use exclusively of their much-soiled pillow-slips, sheets and blankets. At the end of twenty-one nights of such intimate contact with these fomites, they also went into quarantine, from which they were released five days later in perfect health.

From January 11th till January 31st, a period of twenty days, "Building No. 1" continued to be occupied by two other non-immune Americans, who, like those who preceded them, have slept every night in the beds formerly occupied by yellow fever patients

and in the night-shirts used by these patients throughout the attack, without change. In addition, during the last fourteen nights of their occupancy of this house they have slept, each night, with their pillows covered with towels that had been thoroughly soiled with the blood drawn from both the general and capillary circulation, on the first day of the disease, in the case of a well-marked attack of yellow fever. Notwithstanding this trying ordeal, these men have continued to remain in perfect health.

The attempt which we have therefore made to infect "Building No. 1," and its seven non-immune occupants, during a period of sixty-three days, has proved an absolute failure. We think we cannot do better here than to quote from the classic work of La Roche.* This author says: "In relation to the yellow fever, we find so many instances establishing the fact of the non-transmissibility of the disease through the agency of articles of the kind mentioned, and of merchandise generally, that we cannot but discredit the accounts of a contrary character assigned in medical writings, and still more to those presented on the strength of popular report solely. For if, in a large number of well authenticated cases, such articles have been handled and used with perfect impunity—and that, too, often under circumstances best calculated to insure the effect in question—we have every reason to conclude that a contrary result will not be obtained in other instances of a similar kind; and that consequently the effect said to have been produced by exposure to those articles, must—unless established beyond the possibility of doubt—be referred to some other agency.

The question here naturally arises: How does a house become infected with yellow fever? This we have attempted to solve by the erection at Camp Lazear of a second house, known as "Building No. 2," or the "Infected Mosquito Building." This was in all respects similar to "Building No. 1," except that the door and windows were placed on opposite sides of the building so as to give through-and-through ventilation. It was divided, also, by a wire-screen partition, extending from floor to ceiling, into two rooms, 12 x 14 feet and 8 x 14 feet respectively. Whereas all articles admitted to "Building No. 1" had been soiled by contact with yellow fever patients, all articles admitted to "Building No. 2" were first carefully disinfected by steam before being placed therein.

On December 21, 1900, at 11.45 a. m., there were set free in the larger room of this building fifteen mosquitoes (*C. fasciatus*)

* R. La Roche: Yellow Fever, vol. ii, p. 516, Philadelphia.

which had previously been contaminated by biting yellow fever patients, as follows: 1, a severe case, on the second day, November 27, 1900, twenty-four days; 3, a well-marked case, on the first day, December 9, 1900, twelve days; 4, a mild case, on the first day, December 13, 1900, eight days; 7, a well-marked case, on the first day, December 16, 1900, five days—total, 15.

Only one of these insects was considered capable of conveying the infection, viz., the mosquito that had bitten a severe case twenty-four days before; while three others—the twelve-day insects—had possibly reached the dangerous stage, as they had been kept at an average temperature of 82° F.

At 12, noon, of the same day, John J. Moran—already referred to as Case 2 in this report—a non-immune American, entered the room where the mosquitoes had been freed, and remained thirty minutes. During this time he was bitten about the face and hands by several insects. At 4.30 p. m., the same day, he again entered and remained twenty minutes, and was again bitten. The following day, at 4.30 p. m., he for the third time entered the room, and was again bitten.

CASE 7.— On December 25, 1900, at 6 a. m., the fourth day, Moran complained of slight dizziness and frontal headache. At 11 a. m. he went to bed, complaining of increased headache and malaise, with a temperature of 99.6° F., pulse 88; at noon the temperature was 100.4° F., the pulse 98; at 1 p. m., 101.2° F., the pulse 96, and his eyes were much injected and face suffused. He was removed to the yellow fever wards. He was seen on several occasions by the board of experts, and the diagnosis of yellow fever confirmed.

The period of incubation in this case, dating from the first visit to "Building No. 2," was three days and twenty-three hours. If reckoned from his last visit it was two days and eighteen hours. There was no other possible source for his infection, as he had been strictly quarantined at Camp Lazear for a period of thirty-two days prior to his exposure in the mosquito building.

During each of Moran's visits, two non-immunes remained in this same building, only protected from the mosquitoes by the wire-screen partition. From December 21, 1900, till January 8, 1901, inclusive—eighteen nights—these non-immunes have slept in this house, only protected by the wire-screen partition. These men have remained in perfect health to the present time.

December 28, after an interval of seven days, this house was again entered by a non-immune American, who remained twenty-

five minutes. The subject was bitten by only one insect. The following day he again entered and remained fifteen minutes, and was again bitten by one mosquito. The result of these two visits was entirely negative. As the mortality among the insects in this room, from some unknown cause, had been surprisingly large, it is possible that the subject was bitten by insects not more than thirteen days old, in which case they would probably not infect, since they had been kept for only five days at a temperature of 82° F., and for eight days at the mean temperature of the room, 78° F.

Be this as it may, nothing can be more striking or instructive as bearing upon the cause of house infection in yellow fever, than when we contrast the results obtained in our attempts to infect Building No. 1 and No. 2; for whereas, in the former *all* of seven non-immunes escaped the infection, although exposed to the most intimate contact with the fomites for an average period of twenty-one nights each, in the latter an exposure reckoned by as many minutes was quite sufficient to give an attack of yellow fever to one out of two persons who entered the building—50 per cent.

Thus at Camp Lazear, of seven non-immunes whom we attempted to infect by means of the bites of contaminated mosquitoes, we have succeeded in conveying the disease to six, or 85.71 per cent. On the other hand, of seven non-immunes whom we tried to infect by means of fomites, under particularly favorable circumstances, we did not succeed in a single instance. Out of a total of eighteen non-immunes whom we have inoculated with contaminated mosquitoes, since we began this line of investigation, eight, or 44.4 per cent., have contracted yellow fever. If we exclude those individuals bitten by mosquitoes that had been kept less than twelve days after contamination, and which were, therefore, probably incapable of conveying the disease, we have to record eight positive and two negative results—80 per cent.

CONCLUSIONS.

1. The mosquito (*C. fasciatus*) serves as the intermediate host for the parasite of yellow fever.

2. Yellow fever is transmitted to the non-immune individual by means of the bite of the mosquito that has previously fed on the blood of those sick with this disease.

3. An interval of about twelve days or more after contamination appears to be necessary before the mosquito is capable of conveying the infection.

4. The bite of the mosquito at an earlier period after contamination does not appear to confer any immunity against a subsequent attack.

5. Yellow fever can also be experimentally produced by the subcutaneous injection of blood taken from the general circulation during the first and second days of this disease.

6. An attack of yellow fever, produced by the bite of the mosquito, confers immunity against the subsequent injection of the blood of an individual suffering from the non-experimental form of this disease.

7. The period of incubation in thirteen cases of experimental yellow fever has varied from forty-one hours to five days and seventeen hours.

8. Yellow fever is not conveyed by fomites, and hence disinfection of articles of clothing, bedding, or merchandise, supposedly contaminated by contact with those sick with this disease, is unnecessary.

9. A house may be said to be infected with yellow fever only when there are present within its walls contaminated mosquitoes capable of conveying the parasite of this disease.

10. The spread of yellow fever can be most effectually controlled by measures directed to the destruction of mosquitoes and the protection of the sick against the bites of these insects.

11. While the mode of propagation of yellow fever has now been definitely determined, the specific cause of this disease remains to be discovered.

BACTERIAL LIGHT.

We are indebted for a good many things, says "The Lancet," to the wondrous synthetic and analytical powers of micro-organisms. Bacteria are being utilized in the arts and manufactures, and they promise soon to be the effectual scavengers of the offensive products incidental to the existence of human life. Indeed, it would seem that the great species of bacteria around us present a variety of functions which doubtless could be turned to many a good account. Bad microbes we know there are, whose subtle operations set up the specific poison of disease, but it would indeed be a very odd circumstance if time should prove that the microbe can be so manipulated as to afford us artificial light. Yet there exists a microbe which, when properly fed, will grow and multiply enormously, emitting during its development a strange phosphorescent light.

In the past we have been wont to look upon phosphorescence as a phenomenon due essentially to the presence of phosphorus somewhere. We now know that this is a mistake, for phosphorescence occurs in a very great number of instances in the entire absence of phosphorus. Phosphorescence is undoubtedly a manifestation of chemical or physical change, but the change of course may not always be due to the working of countless microscopic organisms. It certainly is in the case of the phosphorescence of the sea. In this case the phosphorescence is best when the sea is disturbed, and the maximum of light is emitted from the crest of a short, rapid wave or in the foam produced by some disturbance. This is due to the fact that the phosphorescent bacteria or photo-bacteria are much more active in the presence of an excess of oxygen. Indeed, the respiratory exchange or oxidation of the bacteria is the cause of sea phosphorescence, since if the micro-organisms be killed or oxygen be excluded the light is quenched at once, while on adding an abundant supply of combustible food-stuff such as sugar, the light is intensified. The glow of ordinary yellow phosphorus is, of course, due to direct oxidation without the agency of micro-organisms. The peculiar greenish glow seen upon stale haddocks and other sea fishes is produced by this remarkable photo-bacterium, and is in no way connected with the presence of phosphorus. It is possible to cultivate the phosphorescent bacteria so as to obtain a fluid which is very strongly phosphorescent. Thus by placing the flesh of fresh haddocks or herrings in a two to three per cent. solution of common salt, and keeping at a low temperature—about seven degrees above freezing—it will be found that after a few days not merely the fishes, but also the whole of the liquid in which they are immersed, give off a pale greenish light, which becomes much more brilliant if a little sugar be added. Pure cultures may thus be obtained exhibiting such a strongly phosphorescent light that by protracted exposure they may be photographed by their own light. It is not possible to say whether the culture will ever be carried to such a pitch that the vessel containing it may be used with advantage as a street lamp or a lamp upon our tables or a Chinese lantern at our garden parties. But the wonderful functions of bacteria are many, and the possibilities of using their powers multifarious.

THE UTILITARIAN PRINCIPLES OF TAXATION AND THEIR RELATION TO ALTRUISM.*

By R. S. GUERNSEY, of the New York Bar.

THE BURDENS OF TAXATION AND SERVITUDES THAT ARE UPON LAND AND REAL ESTATE.

In ascertaining what the burdens are on real estate in cities we should calculate the cost of opening and making of streets, and their uses and maintenance for public use, and next who and what has to bear these burdens of expense, and other servitudes appertaining thereto.

The quantity of the surface of land applied to public use for streets can be definitely calculated for any locality. A block of land two hundred feet deep and eight hundred feet long, with a forty foot street along its front and one at the end, twenty-five per cent. of land will be taken up by streets.

In making an object lesson in this subject of social conditions and needs, no more striking examples can be produced than appear in New York, being *less* burdensome in other cities, but never any *more* burdensome elsewhere. It has now reached a climax that imperatively demands change.

In these lessons and examples it should be borne in mind that New York State has more than one-tenth of the population of the United States, and New York City has about one-half the population of the State. Its commercial importance to the nation and influence are relatively much more than one-half that of the whole nation. The effects of legislation, or the need of it, on social and industrial conditions is more sharply and immediately perceptible in New York than elsewhere for many reasons, which it is not necessary to further enumerate at this time.

When land is taken for street purposes the cost of the work, including the damage to some abutting and adjoining land owners, as well as benefits to other abutting and adjoining land owners, is paid for by the abutting and adjoining land owners and not by the city taxpayers at large. This includes the cost of grading, which is assessed upon the land according to the section it covers.

The land taken for the street is paid for to the owner, but it is

*Continued from page 424.

only nominal, for whatever the value may be awarded, the cost of the surveying, mapping, etc., is added to the awards in assessing the cost of the work, and the abutting owner has usually to pay it all, except in cases where he is awarded damage for other injury to his land in taking it for a street.

The curbing and paving is also assessed on the abutting land, so is the expense of the sidewalk when it is first made. In some cities in New York State the expense of maintenance and repair of pavements and sidewalks is always borne by the abutting and adjoining land owners. In making these assessments for cost the frontage of the land is taken without regard to the value of any improvements or structures upon it, or the actual value of the land, excepting the actual depth of the lots benefited or damaged by the improvement. In recent years in New York City the adjoining and abutting property owners are only required to pay for the paving and curbing of streets and sidewalks once; after that the public revenue must pay for the maintenance and repairs and renewing any paving, curbing and sidewalks in every locality where the property owners have paid for it when first done.

In the construction of a sewer the expense is borne by the land, according to its surface, without regard to any improvements or structures upon it, or the purposes for which the land is or may be used or the quantity or extent of the matter it may put into the sewer. The extent of the surface of the land assessment is according to the location which the sewer is designed shall drain it. This applies to the cost of a trunk sewer, as also to any collateral and side sewer that must empty into it. The assessment is the same regardless of whether the sewer is ever used or not by the possessor of the land assessed, or whether there are any structures or not upon the land, or the greater or less extent or purposes of their use. The sewer-basins at street corners, for surface drainage and for cleaning of streets and gutters, are included in this cost of the sewer. It is an easement in the street that the property owners never get pay for.

When any part of the expense of opening, widening, grading, paving or curbing of a new street of extra width in any city, or the construction of a sewer is done partly at the public expense in New York State, it is authorized by a special law defining and designating the work and specifying the portion of the cost that shall be borne at the expense of the public at large, or the district which shall be locally assessed for the work—and also to authorize the appointment of commissioners for the appraisement of the damage

for the taking of the necessary property, and providing how the work shall be done, and for assessing the property that is benefited by the work. Such special laws are seldom enacted, however, although it is done where the street is to be of extra width.

When the owner of a lot proceeds to build, he must have his plans for the building approved by the proper officer, and must in some localities have the thickness of the walls prescribed and of stone or brick, or some fire-proof materials, and must have the foundation built in a specified manner at a prescribed depth. It must be supplied with windows and water and proper sewer connections appropriate to its size and use, and designated internal sanitary equipments. In many instances specific sanitation ordered by the Board of Health on special property may be made under official direction, if not done by the owner when required, and the expense of it is made a specific lien upon the land and premises affected.

The water mains in streets, for private or public supply, are placed there without any immediate assessment upon the land for the expense of their cost, or the cost of the waterworks. Where the municipality owns the waterworks this is made up by an annual tax on the land, where there are water mains in the street in which it lies. In some cases it is only applied according to the size and use of the structures, and in some cases it is applied to land according to the size of the lot, the same as if a single family dwelling house were upon it. The annual charge for water varies in amount in the city of New York about three hundred per cent. for the minimum and maximum for the same quantity of water.

The charges for water is according to the frontage, the number of stories, and the number of water equipments in it, and by the number of families the building is provided for occupancy, and in buildings other than for domestic purposes the quantity of water used is paid by meter charges, when required by the owner, or may be according to the purposes for which the structure is used.

Whether the water is supplied by municipal ownership of the plant or the general supply is furnished to the city by contract with private ownership, or the city may allow private owners to furnish water at specified rates, the expense is an annual specific tax upon the occupiers of buildings and land, and paid for by them and not by general taxation. The water tax in New York City is placed on the annual tax rolls, and is collected with other taxes on land.

(The subject of municipal ownership of waterworks and other public utilities will be treated hereafter.)

In New York City a few years ago the charter allowed the City Council, when it authorized a local public improvement, to provide what part of the expense should be borne by the local property owners affected thereby and what portion should be borne by the city at large. It was soon found that this plan stopped much-needed improvements in streets and sewers, because those that had them were satisfied with their condition, and would not compel their constituents to pay for improvements that did not affect their immediate locality, and it would also increase the city expenses and divert the public revenues from more necessary purposes, and narrow the margin of the city debt limit. The localities did not desire to bear the entire burden that it would entail, hence very few new improvements were projected. After a few years' experience there was a return to the plan that the expense of all local improvements must be borne by the locality benefited, unless otherwise specifically authorized by the State legislature. The work is to be authorized by the General Board of Public Improvement, generally without regard to the wishes or desires of the local property owners that have to pay for it, so long as it is thought that the public welfare present and future will be promoted by it. The few must not prevail against the greatest good to the greatest number. In some cities in New York State the City Council, on the advice and recommendation of the financial board, may in some cases designate what portion of any local public improvement shall be borne by the municipality and what portion by the local property owners.

The requirement by city ordinances that each owner or occupant of land along a street shall at all times keep the sidewalk clear of snow and ice under a penalty for each offense is an involuntary servitude without regard to the size or nature of the structures upon it, or whether the land is vacant or in use. The landowner must see that it is done by his tenant or by himself. This is required in all cities and villages by ordinance.

The lighting and cleaning of streets is paid for out of the general revenue, so is the expense of cleaning and repairing of sewers in streets.

Parks for the public are paid for by bond issues; the interest is paid out of the general public revenue. The adjacent property is not nominally assessed for the property taken, but the increased valuation for the annual taxes is much more in consequence of the improvement, and the increased assessment for general taxation on the land so situated is soon more than sufficient to pay the interest on the bonds that were issued for the cost of the parks.

Where any portion of the expense of the work is borne by the municipality at large it is met by bond issues, the interest to be paid out of the general public revenue.

No special assessment is made on the city to pay for the work. The assessment on the abutting and adjoining owners must be paid for by them within sixty days, under a penalty and increased interest on the amount, which must be paid within three or four years at the longest, or the property assessed will be sold to pay the amount due. Where the property is mortgaged, the usual terms of it require that the assessment must be paid within sixty days, or in default the entire mortgage will be deemed due and may be foreclosed at once.

This mode of paying for local public improvements is very hard on the suburbs in New York City. The improvements that must now by law be a specific charge and lien upon local property claimed to be benefited thereby, are by far the largest and most important part of the expense incident to a growing city. If all this were to be a city charge, the constitutional debt limit would soon be reached, and other improvements and public works, such as rapid transit, tunnels, bridges and the like, must halt. The cost of the work not being charged to the city, it is very likely not to be as economically done as it might be.

The assessment on abutting and adjoining property for these public improvements is based upon the grounds of the cost of the work, and also the benefits to the local property for the particular improvement. In addition to the immediate assessment, the property and all the improvements and structures thereon and appurtenances thereto are increased in valuation for annual taxes which are imposed for general purposes for the city government. The law requires that all the property shall be assessed at its actual value. It is often increased in valuation from time to time, but never marked down unless there is some great change in the particular property.

It is evident that such conditions are not favorable to the growth and prosperity of any city. So long as public improvements and bond issues to pay for them are restricted by a small section of a municipality, or a small number of its legislative body, its growth and general welfare will be retarded by narrow and selfish views, without regard to the future.

The broader powers that now prevail as to ordering local improvements, evolved out of social conditions that existed from time to time, and are demanded by intelligent observation of their neces-

sity. The marked activity for public improvements is owing to this broad policy required for the general welfare, and controlled by it.

Under such a policy the question of the proportion of general taxation that should be borne by land and the structures and improvements upon it in cities are of much more importance than appears at first view.

(*Same subject to be continued.*)

MORE THAN HE EXPECTED.

Englishmen know little of the geography of the "States," and what little they do know does not object to putting Philadelphia next door to Boston, or San Francisco alongside of New York. An American and an Englishman who had become friends aboard ship had a pleasant encounter about distance on reaching New York.

They breakfasted together, and the following conversation ensued:

"I guess I'll turn out to see Harry after breakfast," said the Englishman.

"Harry?" queried the American, softly.

"Yes, my brother," explained the Englishman. "I've two here. Harry lives in San Francisco and Charlie in Chicago."

"But you'll be back for dinner?" facetiously asked the American.

The Britisher took him seriously. "Sure for dinner, if not for lunch," he answered. And accompanied by his friend, now thoroughly alive to the humor of the incident, he found himself a few minutes later in the line of ticket buyers in the Grand Central Depot.

"An excursion ticket to San Francisco, stopping at Chicago Station on return," he ordered.

The ticket agent put about a quarter of a mile of pasteboard under his stamp, pounded it for a minute or more, thrust it before the explorer, and expectantly awaited payment.

"When does the train go?" asked the Englishman.

"In ten minutes," was the answer.

"How much is it?"

"One hundred and thirty-eight dollars and fifty cents."

"What!" the Englishman gasped. "How far is it?"

"Three thousand miles."

"Dear me! What a country!"—"Youth's Companion."

COSMOPOLITAN HEALTH STUDIES.

By F. L. Oswald, M. D.,
Author of "Physical Education," "The Remedies of Nature," Etc.

I.—SCANDINAVIA.

Cold, pure air is Nature's panacea for the cure of germ diseases, and the first October frost abates climatic fevers all over the lowlands of the Northern Hemisphere. In midsummer a north-wind day gives a new lease of life to thousands of children sweltering in the crowded tenements of large cities. Consumptives, who would cough their lungs away in the debilitating atmosphere of the tropics, recover in tent camps of the upper Adirondacks. Frost is a peptic stimulant, and even a moral tonic, and it is a suggestive fact that nine out of ten international wars end with the victory of a northern nation over its southern neighbors.

Egypt conquered by Persia, Persia by Greece, Greece by Rome; armies of trained Roman legionaries vanquished by the iron-fisted warriors of the north; South German Austria overpowered by North German Prussia, South Spanish Moors by North Spanish Goths, dozens of South Italian principalities by North Italian Savoy; history repeating itself from Northern Europe to South America, where warm-land Peru had to yield to Chile, and Brazil more than once to the Argentine Republic.

"The difficulty of subduing the American aborigines," says Bernal Diaz in his chronicle of the Spanish conquests, "increases with the distance from the equator, till we reach the regions where perpetual winter stunts trees to shrubs and men to dwarfs."

In accordance with that rule we should expect to find the maximum of physical vigor near the pole-ward limits of agriculture, and Prince Wallenstein, though himself a champion of the South, had no hesitation to admit that only lack of numbers prevented the Scandinavians from achieving the conquest of the world.

The great mountain peninsula of Northern Europe seems, indeed, to have been the original home of the Goths, who fought their way from the Baltic to the Euxine and saved Europe from the risk of a Mongol deluge. On the battlefield of Chalons they beat back the storm of Attila's cavalry charges for a hundred hours, and on the last decisive day turned the tide of battle and routed the old cutthroat king in a manner that precluded his return and completely re-established the prestige of the Caucasian race.

The same shaggy warriors effected the conquest of Spain and vanquished the Emperor Valens on the plains of Adrianople, where one of their athletes created a panic by spearing a Roman centurion and swinging him aloft like a skewered rabbit. They conquered Dalamatia, the Danube Valley, Macedonia, Northern Italy, and, finally, took Rome by storm and sacked the city that had fattened on the spoils of three continents.

Scandinavians, in the more complete disguise of Spanish Goths, also broke the power of the Semitic Moors, whose kinsmen had planted the flag of the Prophet on the ramparts of every large city from Cadiz to Benares.

Scandinavians, masquerading as Knights of Normandy, conquered England, captured Sicily and Naples and vanquished the Turks as they had never been vanquished before, Tancred and Bohemond being two of the few Crusaders who continued to maintain their conquests after the retreat of their allies.

Under Gustavus Adolphus, thirty thousand Scandinavians held their own against the levies of the Austrian Empire; in the trenches of Narwa twelve thousand Swedes would have annihilated seventy thousand Russians if the commander of the Muscovites had not ordered a timely retreat. In the refinements of strategy the Scandinavians were surpassed by several southern nations, but the old Norsemen were the only warriors who carried the love of battle to the length of considering it a disgrace for a soldier to die in his bed, or who, like King Hakon, insisted on sharing the doom of their vanquished companions:

> "Call him not alone, who dieth
> Side by side with gallant men."

A passion for outland conquests is proverbially apt to drain a country of its bravest and most enterprising inhabitants, still the present natives of Scandinavia can stand the tests of physical supremacy in more than one respect.

Their fishermen are out and out the hardiest latter-day creatures of our species. Southwestern Norway contests with Kentucky the honor of producing a superior breed of bipeds from a foot-rule and inch point of view. In the province of Gothland, Sweden, too, there are villages where four out of five adults are six-footers, though the fifth may happen to be a thick-set athlete and the best wrestler of the neighborhood. And in the average of longevity Scandinavia, as a whole, is not surpassed by any other country, its

nearest rivals being Scotland, Turkey, Greece and Southern Russia, in the order named.

Admiral Tordenskiold, who was mortally wounded in a duel (1721), was nursed by a number of friends, who expressed their indignation that a man in the prime of his strength should have been induced to stake his life against that of a worn-out old profligate. "Yes, it's a little unfair," said the dying man; "there have been eight centenarians in our family within the last hundred years." The admiral was a native of Drontheim, where the thrift of the hard-working peasants has attached a stigma to early marriages, thirty years for the groom and twenty-five for the bride having long been considered a fair average.

A similar unwritten law was once enforced in Dalccarlien, and, strange to say, still holds its own on the Island of Corsica, where the dread of over-population has led the highlanders to ostracise neighbors marrying in their teens.

Jan Herfjall, who died in 1842 in a suburb of Falun, came near doubling the stint of the Psalmist, and never left the vicinity of the town, where, according to the parish register, he was born in 1703. But a still more remarkable case is mentioned by Dr. Hufeland (p. 83 of his "Macrobiotic"): Joseph Surrinsen, a native of a little fisherman's village near Bergen, Norway, who died September, 1797, in his 159th year. He was already more than a centenarian when he was temporarily crippled by a rock-slide in a quarry, but in the course of the next ten years fairly regained the use of his injured foot, and was "never internally sick" in his life. Colds could not fasten upon him, but they puzzled him greatly. He used to advance all sorts of grotesque theories about their origin, ascribed them to a contagious form of sheeprot, and what not. Temperate from necessity, if not from choice, he admitted, with a sigh, that he had not been really drunk oftener than twice in his life. There were years when he was too poor to procure liquor in any form. For tea and coffee he had no predilection whatever, and generally washed down his barley cakes with rain-water or a cup of buttermilk. On the day before his death he assembled his numerous relatives and permitted, or rather compelled, them to shake dice for his earthly possessions. "My time's up," he laughed, "and in a day or two you would be fighting and quarreling, so we might as well part in peace and have a little fun for a farewell." His cabin resembled a lottery office, all afternoon, the stentorian voice of the patriarch maintaining order. Pieces of furniture, wearing apparel and a miscellaneous kitchen outfit were

raffled separately and stacked away to the credit of the winner, while the old man kept a keen watch for tricksters and accompanied each round with humorous comments.

Numbness had already crept over the lower part of his body when he made his grandchildren step up, one by one, and dismissed them with a kiss.

Inspector Wessel, of Stavanger, states that in the province of Christiansand it is nothing unusual to see octogenarians at work on their farms. He seems inclined to attribute the vital vigor of the natives to the moist sea winds; still the frost-mitigating influence of the ocean is apt to be overrated, and blizzards are not near as rare as spells of oppressively warm weather. The weather outrages of our northern border States (40° F. below zero at Sault Ste. Marie, Mich.) are, indeed, unknown; but what the winter lacks in rigor it makes up in persistence, as may be inferred from the fact that snow covers the ground from the middle of November to the end of March.

The average yearly temperature at Christiania is 42° F., at Trondhjem 40°, at Hammerfest 35°, and even thus the Gulf stream is working miracles, for Hammerfest is nearly two thousand miles further north than Montreal and Christiania more than one thousand.

Agriculture requires energy, under such circumstances, and, besides plowing, draining and hoeing, the Norwegian farmer has to burn wood, to fertilize his dreary moorlands with ashes. Barley is the staple cereal; the successful cultivation of rye is limited to a narrow strip of coastlands, but the ubiquitous potato has been acclimatized in highland valleys as far north as the sixty-eighth degree of northern latitude, and extra hardy varieties are steadily pushing their way further north, though the first experiments were made in Southern Sweden about 1705—not a bad record for a native of Peru. Wheat ripens scanty crops in Gothland, here and there, but has thus far discouraged all attempts to extend its area of cultivation. The great mass of the rural population stick to barley cakes, potatoes and milk.

If they keep sheep, it is generally for the sake of the wool rather than the mutton, and the hale appearance of the Fjell dwellers would confirm the theories of the Alcott school, if it were not for the enormous quantities of fish consumed in all parts of the lake-studded peninsula.

Fish, served in a sauce of garlic and butter, forms a frequent Sunday dinner, followed by a dessert of cakes and berries, or berry

jelly in winter. Nature has been pretty lavish in the supply of such tidbits. There are districts where, in June, the mountain slopes turn red with ripening strawberries, and whortleberries are even more abundant and are raked in with wooden combs by children, who pass a considerable part of their summer vacations in the mountains. Excellent salmon that would sell fresh in New York at thirty cents a pound is found by horseloads in the cottages of Norwegian peasants, so poor that they have to let their children go barefoot almost all the year round.

"Beef and liberty," the motto of a British bachelor's club, here takes the form of "fish and freedom"—freedom from dyspepsia, too, for ichthyophages, if they will use their garlic in moderation, can certainly claim the advantage of a comparatively digestible diet.

"What do I owe?" asked a traveler who had enjoyed the hospitality of a Norway highland ranch for half a week.

"Owe! How do you mean?" inquired the materfamilias.

"For my board—want to settle my account," said the stranger, holding out a handful of coin.

"No, indeed, sir," said the good wife, pushing back his hand; "as long as that field gives us potatoes and that lake fish no one shall say that Farmer Andersen took money from a visitor."

Coffee, the curse of our Southern hill country, is rarely seen in the Fjells, and the alcohol epidemic was checked before it had crossed the border of Sweden, where at one time the number of private (and permitted) distilleries reached the horrid aggregate of 14,500.

The hereditary prowess of the Goths was beginning to yield to *brandewin,* but about the middle of the nineteenth century a reform movement, inspired by an enthusiasm that has been compared to that of the Protestant Revolt, spread from the Cattegat to the Gulf of Bothnia and stampeded the liquor venders in a way that would have surprised the Kansas prohibitionists. The resolutions of vociferous mass meetings echoed from town to town and never ceased booming till the number of licensed distilleries had been reduced to four hundred in the course of the first decade and below one hundred in the next.

The "Gottenburg system" is not an unmixed blessing and has been denounced as a shameful compromise with the powers of darkness, but, as even the opponents of our South Carolina experiment were obliged to admit, has effected enormous improvements upon the former state of affairs. The sick rate has decreased, in-

dustries are flourishing where the villages swarmed with mendicants, and all over Sweden the drunkenness of the working classes has abated, much to the joy of their staid Norwegian neighbors, who were scandalized at the frequency of border fights, and dreaded the system of conscription that forced their sons to associate with the reckless recruits of the Southlanders.

The difference may have been partly due to the scanty city population of Norway, but partly also to the abundance of healthy pastimes. There are no restrictive game laws on the west side of the Fjells, and the fauna of the Norwegian wilderness includes bears, wolves, deer, reindeer, wildcats, lynxes, foxes, squirrels and rabbits, besides seal and an infinite variety of waterfowl. Grouse abound in the highlands; the harfanger owl is stout enough to fly away with a full-grown hare, and eagles are so numerous that an association of stock breeders recently decided to check their ravages by doubling the government bounty.

The premium on wolf scalps, too, has been increased, and between hunting and fishing, there is never any lack of health-giving pastimes. A good deal of time has to be spent in fuel gathering, but that sort of work, too, is frequently turned into sport. The lumbermen put their bundles of sticks upon runners and use them for sledge races down the snow-covered slopes of the mountains.

When the snow gets deep, hunting parties start out on snow shoes, and it is nothing rare to see a good marksman return from a day's hunt with a forty-pound bundle of mixed peltry and his beard, shawl and unkempt hair all clogged with icicles.

His knee joints may be stiff from the strain of the skye-shoes, but an hour's chat in the warm chimney corner turns all trouble into comfort, and, after a supper making amends for two missed meals, the hunter hangs up his clothes near the fireplace and goes to bed stark naked—perhaps the only custom he has in common with the Carbonari of the Apennines.

A Norway mountain boy of sixteen years has already mastered the rudiments of woodcraft, and the youngsters are indefatigable trappers, whiling away the long winter evenings with the preparation of snares for coneys and partridges.

About an hour after supper the family adjourn to their floor-beds and devote the gathering darkness to a symposium of ghost stories.

On leisure days of the warm season old and young go a-fishing, combining pleasure with a good deal of usefulness, if their bait

holds out, for the perch and salmon waters are practically inexhaustible.

Then comes the berry month and the season for egg gathering and surf bathing, with incidental hunts for sea spoil.

That perennial programme of fun leaves no time for vices, and travelers agree with the verdict of Count Bandissin, that the good nature and exuberant vitality of the Throndjem highlander can reconcile a misanthrope with the human race.

Their piety is of the simplest sort; their moral exemplars join in their Sunday afternoon sports; they are, in fact, children of Nature in a sense almost forgotten in our centres of Sabbatarian bigotry. Next to outdoor exercise mirth is the best of all tonics, and their combination may have a good deal to do with the longevity of the fun-loving highlanders.

On some of the South Sea islands the fanatical suppression of harmless pastimes has decreased the average of longevity one-fourth, nay, led to the extinction of whole tribes, thus proving a more dreadful curse than the now discontinued practice of infanticide.

Many Edens of the tropics have, in that manner, been depopulated by their would-be reformers, while the primitive Northmen have rediscovered, or perhaps never forgotten, the secret of the optimistic Greeks, that one of the surest ways to postpone death is to make life worth living.

(To be continued.)

PHYSICAL CULTURE.

However it has come about, whether through the increasing devotion to athletics or for other reasons, it is clear that physical culture in the broad sense is occupying a more and more conspicuous place in education. This must certainly be regarded as an unqualified good, and chiefly because it is based on a system which may justly lay claim to a scientific basis. Physical training is gradually but surely becoming rational; the excesses to which competitive athletic events are always likely to lead will surely be modified by a knowledge of the physiological effects of training. Both directly and indirectly the present zeal for physical culture, designed not only to make the strong stronger, but also the weak strong, is doing much toward the general development of the masses of young men and women. Institutions have, however,

been slow in completely recognizing the dignity of this branch of education by establishing a definite department under the jurisdiction of a competent head. It is, therefore, of particular interest at this time that the Massachusetts Institute of Technology has taken action to install a new department devoted to physical culure. The formal announcement of this fact was made by President Pritchett at the annual dinner of the Alumni Association recently held in Boston. It was announced that the corporation had voted to give the land for the building, which is to be a memorial to the late General Walker, former president of the Institute. In this building is to be established the new department, provided the necessary endowment fund can be raised, under the charge of "a man who shall be able to do for the physical side of the students what the heads of other departments now do for the intellectual side." It is sincerely to be hoped, and there is small doubt that the hope will be realized, that this somewhat unique department of a great educational institution may be generously maintained. It will prove not only of service to the institution with which it is connected, but will undoubtedly serve as a stimulus toward the establishment of similar departments elsewhere. The time is undoubtedly ripe for just this line of work, and we are gratified to see that so worthy a memorial is to be erected to the lamented president of our most conspicuous technical school.

The tendency everywhere apparent is further shown by the recent meeting in New York of the various physical directors of the larger gymnasiums connected with our schools and colleges. The strength which comes from organization will no doubt show itself by renewed and systematic attempts toward raising the standard of this department of school and university work. The very general introduction of physical training into the public schools has already been productive of much benefit to the pupils. The idea, recently suggested for the Brookline, Mass., schools, of giving special treatment to pupils of imperfect physique, is also unquestionably a step in the right direction. The whole movement toward bringing about a symmetrical physical development, beginning with the very young, is in every way commendable.

In the hands of competent men there is small danger of attaching undue importance to this fundamental branch of a child's education.—"Boston Medical and Surgical Journal."

Nothing more is wanted to render man MISERABLE, than that he should fancy he is so.

APPLES IN ENGLAND.*

Americans, as a rule, find it difficult to understand why such common fruit as apples, for instance, should be so dear in England. Only a very few of the hardier specimens ripen in this climate. Having, however, the best gardeners in the world, the most has been made of circumstances, and by careful cultivation a few dessert fruits of fine flavor but of small and poor appearance have been produced; also a few cooking apples of questionable quality. Within recent years the importation of American, Canadian and colonial apples has assumed considerable proportions, and the following article from the London "Mail," of December 4th, will illustrate general conditions, while it gives deserved credit to Canadian enterprise:

"The *Evangeline,* the new fruit boat belonging to the Furness Line, was inspected yesterday at the Victoria Docks by various representatives of the fruit trade. This fine boat has just brought thousands of barrels of Canadian apples to London, and they are all in splendid condition. The striped Gravensteins and the crimson-cheeked Baldwins looked as fresh as when they were pulled from the trees in the Annapolis Valley. Throughout the year the *Evangeline* will bring big supplies of Canadian fruit to the London market, and it will all be perfectly fresh and sound.

"The successful importation of fruit from Canada is due, the manager explained to a 'Daily Mail' representative, to rapid transit and to storage between decks ventilated by natural means, not by electric fans. With a carrying capacity of over 30,000 barrels, or 90,000 bushels, of apples alone, the *Evangeline* will largely increase the apple supplies of the United Kingdom. The fruit she brought made the highest prices that have been reached this season, and therefore fruit shippers on the other side will be encouraged to export as much good fruit as they possibly can. Her next consignment will be for the Christmas market.

"Fruit from the vast orchards of Oregon and California has also flooded London and the large provincial towns. The imports of this season have so far been phenomenal, both in quality and quantity. Mr. Garcia, of the firm of Garcia, Jacobs & Co., apple merchants, informed a 'Daily Mail' representative yesterday that the immense crop of California and Oregon apples will be of great advantage to consumers, who will be able to purchase fine fruit at moderate prices. California Newtown pippins, he said, are com-

*Consular Reports, March, 1901.

ing in extraordinary abundance, and the public will be able to buy them at 3d. or 4d. (6 or 8 cents) per pound. In other kinds of fruit, such as plums and oranges, the California trade is growing with great rapidity. The Cape, too, thanks to Messrs. Rhodes and Rudd, is increasing its fruit trade. On one of his farms, Mr. Cecil Rhodes has installed a California expert, who has imported and planted every kind of fruit. In the new century England will be colonially supplied with all kinds of fruit."

Nottingham is in almost the exact centre of England, without port facilities, and must therefore pay interior freightage upon importations. This amounts, from either London or Liverpool, to about 1s. (24.3 cents) upon either a barrel or case of apples.

Liverpool quotations of American apples, to a leading firm here, (Nottingham) to-day are, as tabulated (wholesale), from $2 to $4 per barrel.

London quotations: English apples (cooking), $1.22 to $1.70 per bushel; Nova Scotian, $3.77 to $4.25 per barrel; Canadians, $3.89 to $4.01 per barrel; California Newtowns, finest, $2,43 per case.

Add the shilling (24.3 cents) per package in either case, and you arrive, not at the retail, but at the wholesale price of apples in Nottingham to-day. At retail one must pay for Canadian russets, spies, Baldwins or greenings 3d. (6 cents) per pound; for Oregon or California Newtowns, 5d. (10 cents) per pound.

Is it not worth while for American fruit growers to consider the advantages reaped by Canadians through the institution of this new line of ocean fruit vessels, to consolidate their interests and to meet the eminently practical features of this new competition?

S. C. McFARLAND,
Consul.

NOTTINGHAM, December 5, 1900.

CONFUSION OF WORDS.

The misapplication of English words by foreigners is often very ludicrous. A German friend saluted us once with "Oh, good-by, good-by!" meaning, of course, "How d'ye do?" It is said that Dr. Chalmers once entertained a distinguished guest from Switzerland, whom he asked if he would be helped to kippered salmon. The foreign divine asked the meaning of the uncouth word "kippered," and was told that it meant "preserved." The poor man, in a public prayer soon after, offered a petition that the distinguished divine might long be "kippered to the Free Church of Scotland."

MEDICAL EXCERPT.

By T. P. CORBALLY, A. M., M. D.

The May number of the SANITARIAN, in an extract on "Offsprings of Drunken Mothers," stated that: "Conception in drunkenness had a distinct influence, as was shown by the fact that of the seven cases in which the condition was noted, in six the children died in convulsions in the first months of life, in the seventh case the infant was still-born," and an article in "American Medicine" goes still farther to show the deleterious effects on the system, and states:

"That glandular activity is temporarily suspended by moderate doses of alcohol; . . . that muscular efficiency was always decreased in the normal unfatigued muscle; . . . and that mental capability was always lowered, as proved by more than 1,300 tests made by Professor Kraeplin."

ACTION DE L'ALCOOLISME SUR LA PRODUCTION DE L'IDIOTIC ET DE L'EPILEPSIE.—Bourneville, Editor of "Progrés Médical" of the 20th of April shows, in a brief statement from semi-official sources, the dreadful effects of alcoholism on the human system, as it is transmitted from parent to child. The pernicious influence of this vice has never been fully, or even approximately, estimated. Its debasing effects are not restricted to those who are cared for in public institutions; it extends to every class in society; there are few homes that are not more or less afflicted.

"The child suffers the consequences of alcoholism under a variety of forms: first, from chronic alcoholism in the father, or in the mother; sometimes in both; second, alcoholism exists in a state of drunkenness at the time of conception; third, during fœtal life from attacks of alcoholism or frequent intoxication of the mother, or from emotions felt by her during the period of her gestation; fourth, from the same influence while she continued to nurse the child, or still later after the child had been weaned.

"2,072 males and 482 females, idiots, epileptics, imbeciles or hystericals, were entered, the former at Bicêtre since 1879, the latter at Fondation Vallée from March, 1890, to the 31st of December, 1900; a total of 2,554 entries.

"Statistical Table of Alcoholism.

	Males.	*Females.*	*Total.*	
The fathers of	785	148	933	drank to excess.
The mothers of	67	13	80	" " "
The fathers and mothers of...	30	10	40	" " "
For.....	340	110	450	there are no records.
The fathers and mothers of...	850	201	1,051	were sober.
Total.....	2,072	482	2,554	

"Besides, conception during drunkenness of the father has been shown in the case of 235 diseased, and probable conception under similar condition in 86 cases. That will be, if we count the latter, 12.5 per cent. of all the children who were thus conceived, excluding 450 of whom we have no evidence and 732 of whom we have no precise history regarding the time of conception. If then, continuing our statistics, we look for the percentage of the different classes we find:

36.5=P. C. of the fathers who drank excessively.
3.1=P. C. of the mothers who drank excessively.
1.5=P. C. of fathers and mothers who drank excessively.

41.1=P. C. of parents who drank excessively.
41.1=P. C. of parents who were sober.

"This table, brought to the 31st of December, 1900, completes and summarizes our former statistics. It places clearly in evidence the pernicious influence of alcoholism. Persons who are interested in this subject may consult a great number of detailed cases in the "Comples rendus de Bicêtre, 1880 to 1900."

Bourneville, from long association with Bicêtre, may be considered an authority on the subject.

PHTHISIS AND COUNTRY AIR.—M. Brunon has great confidence in the influence of pure air for the cure of tuberculosis ("Gazette Hebdomadaire," April 7, 1901), but he recognizes the material impossibility of furnishing to all the tubercular patients who would need treatment accommodation in special sanitaria. In Germany

asylums in the country for tubercular patients have been greatly increased in number, and much money has been spent on their improvement. France has given little attention in this direction. The number of tubercular patients who could be accommodated in sanatoria is very limited. M. Brunon proposes as an expedient to designate as an asylum for tubercular patients every isolated building in the country conveniently situated, and thus make new sanatoria for the use of such patients.

"Half the cases of phthisis cared for are," says M. Lancereaux, "habitual drunkards of long date. In a second class are found people who have lived in bad hygienic conditions; finally a much smaller part consists of hereditary tuberculosis, and of tubercles from contagion." Tuberculosis, he says, from overcrowding has its maximum of frequency during the period of adolescence, the period when great hygienic precaution is necessary. To combat alcoholism is to aid the prophylaxis of tuberculosis."

M. Lancereaux earnestly calls for the limitation of saloons, beer shops and all places where alcoholic drinks are publicly sold. He insists on the enforcement of hygienic regulations, especially in the construction of dwellings, of public resorts, work-shops, barracks, etc. Health boards are very active in enforcing prophylactic measures to prevent the spread of small-pox and other contagious diseases; what are they doing to prevent alcoholism, the cause of so many diseases and especially of consumption?

The physician who attends daily to forty or more patients suffering from what is called phthisis, tuberculosis, consumption, and all forms of wasting disease, has a wide field for the study of their origin, development, progress; their influence on different constitutions, and the influence of temperaments and constitution on the development and progress of the disease. There is one idea that is common to all classes of this disease: the patient craves alcoholic stimulants; their friends, in every station in life, in every rank in society, even professed temperance advocates, make the fatal mistake of encouraging the baneful appetite; they literally burn the internal organs, keep them constantly saturated with alcohol as no intelligent person would treat a sore of any magnitude on the surface of the body.

METHODS OF ANESTHESIA.—M. Meikuliez, of Breslau, has commented on a question that is especially interesting ("Gazette Hebdomadaire," April 21, 1901); it is the different methods of producing anesthesia, and the indications for each. M. Meikuliez

gives the preference to ether for general anesthesia. The intra-rachidian injections by Bier have been abandoned even by Bier himself, who advises us, as a means of making it less dangerous, to previously subject the patient to a moderate degree of strangulation by constricting the neck with an elastic band.

"I must conclude," says Bier, "that we do not as yet possess a method that may safely be recommended to practitioners. I do not hesitate to declare that the procedure such as I described in my first publication is too dangerous to be generally employed, but I think that in following the course I have indicated we will succeed in ultimately finding a method entirely free from danger."

Tropacocaine seems to be a remedy for the inconvenience and the dangers of intra-rachidian injections of cocaine; Schwartz and Kader have succeeded in this way in producing very many anesthesias. The tropacocaine has freed all who have undergone this operation from vomiting, cephalalgias that are so frequent with the use of cocaine.

It is certain that Bier has too soon despaired of his method; it would certainly be much better if he did not think it a failure, and also if he refrained from calling it such.

In the Treatment of Bed Sores, Dr. Smithwick, of La Grange, N. C., says ("Maryland Medical Journal," January, 1901): "We must use the best means for healing them and making the patient comfortable. In my experience, I have tried a great many things; but have come to the conclusion, which is substantiated by clinical results, that I obtain the best results by thoroughly washing the parts with warm, normal salt solution, bathing in peroxide of hydrogen, and dressing in pledgets of cotton or strips of gauze soaked in Ecthol. This dressing is repeated once, twice or thrice daily as the urgency of the case seems to demand.

Treatment of Constipation.—The habitual use of purgatives is not to be encouraged (Dr. J. A. Rene, "Chicago Medical Times"), as it only increases the disability which they are intended to remove; and therefore it is essential that the treatment should be one aiming at permanent results as well as relief. And for that reason it is very often necessary to combine drugs that will not only relieve the constipation, but also cure the other pathological conditions which might have been the primary cause of the constipation, or have been brought about by the constipation itself. Of late years many preparations have been placed at the disposition of

physicians, and some of these preparations are certainly scientific combinations. But of all the recent preparations which have come to my notice, I have found the Laxative Antikamnia and Quinine Tablets to be the most efficacious in relieving cerebral disturbance, as well as curing the intestinal trouble.

A close study of this combination shows that it is a tonic-laxative, analgesic and antipyretic—and its administration in certain cases is sure to be followed with excellent results. For instance, in the sequelæ of typho-malarial cachexia, when a gentle and safe laxative combined with an anti-periodic is required, I have found this preparation of the utmost value. The co-operative or synergetic properties of these ingredients will readily commend themselves to the profession.

THE PLAGUE seems ("Medical Record") slowly but surely becoming pandemic throughout the world. Telegrams from Melbourne announce that the disease is increasing in the Australian commonwealth, and that there is much alarm over its spread. Another report states that eighteen thousand persons have died of the plague in the Lamko district of Hai-Nan island during the last few months. In letters from India to the State Department at Washington, covering the period from November 4th to February 16th, it is reported that in Bombay alone there were 4,554 cases of plague, with 2,574 deaths, and in Calcutta 1,052 cases, of which 1,002 cases were fatal. At Cape Town, during the week ending April 20th, there were 64 new cases, 33 deaths, and 29 convalescents. Altogether there have been 455 cases of the disease, of which 113 patients have been Europeans. The total number of deaths has been 185, including 32 Europeans. The report of the commission appointed to investigate the plague in San Francisco, published by the surgeon-general of the marine-hospital service, has established beyond doubt, and greatly to the rage of the governor of California, that the disease prevails among the Chinese in that city.

POW'FUL MEDSIN.

A colored woman threw the odds and ends of medicine left after her husband's death into the fire. The explosion that followed carried the stove through one of the windows. "Mos' pow'ful movin' medsin I eveh saw'd," she said. "No wondah the ole man gone died."

EDITOR'S TABLE.

☞All correspondence and exchanges, and all publications for review, should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.

SANITARIAN, JUNE, 1901.

ABOUT ICE.

Alderman Norris of Boston exhibited a praiseworthy watchfulness a few days ago ("Globe," May 24th), in offering an order "that the Board of Health employ an expert chemist, whose duty it shall be to make an analysis of ice stored by the several ice companies supplying the same in the city of Boston, for the purpose of ascertaining its purity for use, and report such findings to this board."

Speaking to the order, Alderman Norris said:

"The city and State authorities are kept very busy with the problem of restricting pollution, and even with the most careful supervision our streams are badly contaminated. What then can be said of our ice crops, where no supervision is had, much less required by the owners?

"Did you ever hear of an ice company troubling itself, prohibiting or prosecuting offenders for polluting their grounds?

"Have you ever observed the general condition of an ice plant bordering on a lake or pond? If so, have you not seen the most dilapidated buildings and surroundings? No such thing as paint or cleanliness.

"The whole has more the appearance of a garbage plant than anything else, but paint and cleanliness cost money and would therefore deduct from the profits of the trust, and, what is more, the consumer as a rule does not see them, so what does it matter?

"The direct or indirect pollution of water which sewage or other human or animal waste causes must be condemned if we would avoid the possibility or probability of distributing disease by the use of ice which comes from such sources. Ice, which is water in its solid form, has become a very important factor in the well-being of mankind, and is absolutely essential to his welfare to-day.

"Ice fields and crops are selected solely because of their cheapness for production, with little or no heed as to their sanitary conditions; and this business is unrestricted and unmolested in its conduct, notwithstanding it can and probably does convey more disease than any and all other sources.

"This country harvests $100,000,000 worth of ice a year; its

product is greater than the combined output of gold and silver of the country, and such a business, in my opinion, needs some supervision and regulation."

The order was passed.

Like action by the aldermen of other cities, or, in default of such action, by the health authorities, would doubtless go far toward preventing the spread of typhoid fever and other water and ice-born disease germs during the summer just at hand.

IMMUNITY.

It is not unusual in the experience of bacteriologists, the "Medical Press" observes, at one time or another, when raising the virulency of a strain of bacteria by passing the virus through a series of rabbits, to find every now and then certain of them which are unaffected by the inoculation. This individual immunity is often noticeable in man, for in any serious outbreak of diphtheria, plague, small-pox, or typhoid fever, there will be found those who not only may be in attendance on infected cases, but may also be in far from good health themselves, and who yet do not contract the disease. The cut-and-dried explanation of the above generally given is that the reason they do not suffer from the epidemic is that they are naturally immune, leaving, however, the question of why it is so unanswered. It has been lately shown that the Arabs as a race are immune from enteric fever, and the theory has been advanced that the immunization is attained by reason of the fact that the Arab in childhood is habitually accustomed to drinking foul, unwholesome water. It has been further pointed out by those who support these views that army medical statistics show that diseases of the digestive canal are twice as frequent among European troops as among the native soldiers in Algeria and Tunis. In traumatic infections the serous membranes of the Arab are very resistant, and particularly the peritoneum and the pleura, which probably accounts for the very exceptionally favorable results in abdominal surgery among the Arabs.

In striking contrast, however, with the above, it is found that Arabs as a race are singularly subject to pulmonary affections, and exhibit a very marked susceptibility to pneumococcal infection. Exceptions in regard to infections are very interesting studies, but it would seem difficult to establish the fact that there is such a condition as absolute racial immunity. In the case of anthrax, though it is very fatal for ordinary sheep, Angora sheep are not affected

by it, and in the same manner ordinary rats are susceptible to anthrax, while white rats are immune, but these statements do not apply if the animals are placed under abnormal conditions.

CHRISTIAN SCIENTISTS NOT INSURABLE.

The Knights of Honor have ruled that persons believing in the doctrines of so-called "Christian Science" will not hereafter be received into membership. This action has been taken because it was seen to be reasonable not to take any risks upon the lives of persons who refuse to avail themselves of the accumulated knowledge of medical science when they are ill. It is now learned that one of the greatest and most conservative life insurance companies in the world, the Mutual Life Insurance Company of New York, without making any parade of the matter, refuses to issue policies upon the lives of "Christian Scientists." These facts are not noted to give these organizations credit for doing that which common sense and good business policy suggests, but to show the very fact that, viewed from the commercial standpoint, the "Christian Scientist" and faith curist are recognized as persons who do not take average care of their lives. Hence they are being classed with drunkards and with those who follow hazardous occupations.

MEASURE OF SENSIBILITY TO PAIN.

A Chicago correspondent says the "temporal algometer" is to be tried on public school children there. It was invented by Arthur McDowell of Washington, D. C., psychologist of the United States Bureau of Education. It is designed to test pupils' sensibility to pain. By this device pressure is applied to a child's temples and gradually increased until the child cries out from the pain. The quicker the cry comes the greater the child's sensibility, and, by the theory, the greater its cleverness. The storm of opposition is rising. A "temporal algometer" has been offered to the Board of Education. Every suggestion of cruelty is said to have been removed from the test. One of the objects in making the test is to establish the relation between the keenness of the senses and the intellect. It is shown that, the more sensitive children are to pain, the brighter pupils they make. This is explained by the fact that knowledge is obtained through the senses, and the keener the senses the better the opportunity for knowledge. The pain test is not entirely new. It has been tried with adults, and several interesting theories have been formed. It was shown by tests that washerwomen are less sensitive to pain than women clerks in stores.

MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

NEW YORK.—Bulletin of State Department of Health for March reports: Population, 7,268,000: Total deaths, 11,913; death rate, 19.2; deaths under five years, 3,070; percentage of deaths under five years to total deaths, 25.8; from zymotic diseases, per 1,000 from all causes, 94; from cerebro-spinal meningitis, 61; typhoid fever, 111; malarial diseases, 6; small-pox, 39; scarlet fever, 200; measles, 100; erysipelas, 50; whooping cough, 57; croup and diphtheria, 277; diarrhœal diseases, 215; acute lung diseases, 2,522; consumption, 1,293; puerperal diseases, 122; diseases of digestive system (not diarrhœal), 644; urinary system, 884; circulatory system, 1,116; nervous system, 1,324; cancer, 409; accidents and violence, 409; old age, 532; unclassified, 1,542.

City of New York, 3,536,517: Total deaths, 6,398; death rate, 21.2; deaths under five years, 1,957; from cerebro-spinal meningitis, 27; typhoid fever, 42; malarial diseases, 5; small-pox, 37; scarlet fever, 159; measles, 30; erysipelas, 21; whooping cough, 19; croup and diphtheria, 225; diarrhœal diseases, 169; acute respiratory diseases, 1,376; consumption, 778; cancer, 217.

Borough of Manhattan, 1,873,562: Total deaths, 3,526; death rate, 22.0; deaths under five years, 1,153; from cerebro-spinal meningitis, 19; typhoid fever, 20; malarial diseases, 2; small-pox, 1; scarlet fever, 87; measles, 13; erpsipelas, 10; whooping cough, 125; croup and diphtheria, 125; diarrhœal diseases, 102; acute respiratory diseases, 764; consumption, 381; cancer, 131. *Small-pox during three weeks ending May 4, 27. The number of cases is increasing.*

Borough of the Bronx, 22,124: Total deaths, 447; death rate, 24.0; deaths under five years, 109; from cerebro-spinal meningitis, 3; typhoid fever, 1; small-pox, 36; scarlet fever, 15; erysipelas, 1; whooping cough, 1; croup and diphtheria, 10; diarrhœal diseases, 5; acute respiratory diseases, 84; consumption, 110; cancer, 12.

Borough of Brooklyn, 1,209,064: Total deaths, 2,087; death rate, 20.1; deaths under five years, 618; from cerebro-spinal meningitis, 4; typhoid fever, 17; malarial diseases, 3; scarlet fever, 53; measles, 15; erysipelas, 7; whooping cough, 5; croup and diphtheria, 81; diarrhœal diseases, 56; acute respiratory diseases, 465; consumption, cancer, 68.

Borough of Queens, 162,834: Total deaths, 210; death rate, 15.2; deaths under five years, 47; from cerebro-spinal meningitis, 1; typhoid fever, 1; scarlet fever, 2; erysipelas, 2; croup and diph-

theria, 3; diarrhœal diseases, 6; acute respiratory diseases, 45; consumption, 27.

Borough of Richmond, 68,933: Total deaths, 118; death rate, 20.1; deaths under five years, 30; from typhoid fever, 1; scarlet fever, 2; measles, 2; erysipelas, 1; croup and diphtheria, 6; acute respiratory diseases, 18; consumption, 10; cancer, —.

Albany, 94,151: Total deaths, 164; death rate, 20.4; deaths under five years, 31; from typhoid fever, 1; erysipelas, 1; croup and diphtheria, 2; diarrhœal diseases, 1; acute respiratory diseases, 42; consumption, 27; cancer, 9.

Syracuse, 108,374: Total deaths, 147; death rate, 1?.0; deaths under five years, 32; from cerebro-spinal meningitis, 1; typhoid fever, 1; scarlet fever, 1; erysipelas, 2; whooping cough, 1; diarrhœal diseases, 3; acute respiratory diseases, 28; consumption, 12; cancer, 6.

Buffalo, 352,387: Total deaths, 428; death rate, 14.5; deaths under five years, 109; from cerebro-spinal meningitis, 3; typhoid fever, 5; scarlet fever, 3; measles, 1; whooping cough, 7; croup and diphtheria, 5; diarrhœal diseases, 11; acute respiratory diseases, 75; consumption, 46; cancer, 24.

Rochester, 162,608: Total deaths, 221; death rate, 16.0; deaths under five years, 40; from cerebro-spinal meningitis, 2; typhoid fever, 1; erysipelas, 2; croup and diphtheria, 4; diarrhœal diseases, 2; acute respiratory diseases, 44; consumption, 20; cancer, 9.

CALIFORNIA.—Los Angeles, 102,479: Report for April: Total deaths, 170; death rate, 19.9; from cerebro-spinal meningitis, 2; typhoid fever, 4; scarlet fever, 4; measles, 1; erysipelas, 1; diphtheria, 3; acute respiratory diseases, 24; consumption, 31; cancer, 1.

The Truth About the Plague.—Abstract of report (Public Health Reports for April, 1901) by special commission, Professors Flexner of the University of Pennsylvania, Novy of the University of Michigan, and Prof. Barker of the University of Chicago, appointed by the Secretary of the Treasury for the purpose of ascertaining the existence of bubonic plague in San Francisco, or other ports or places in the State of California under instructions furnished by the surgeon-general of the United States Marine Hospital Service. From February 5th to February 16th, 13 dead Chinese were inspected—6 were undoubtedly due to infection with plague. A seventh (death No. 8) may have been a case of plague which went unrecognized. The 6 undoubted deaths from plague

occurred during the eight days from February 5th to February 12th, inclusive. During the days, February 13th to February 16th, inclusive, no new cases of plague or deaths therefrom were encountered.

"Two of the deaths from plague occurred in the Chinese Theatre on Washington Street. The other four cases occurred singly in different parts of Chinatown.

"The study of cases during life and the inspection of bodies after death prove that it is often difficult and under certain circumstances impossible to make a diagnosis of plague, even post-mortem, without bacteriological examination. In outspoken bubonic cases there will be but little, if any, difficulty in diagnosis, either *intra vitam* or post-mortem, provided the observer has had sufficient experience with the disease, but in the absence of primary buboes, the unskilled observer will miss practically every case and even the practitioner who has had much experience with plague may be deceived. Your commissioners feel sure, from experience with plague in Hongkong, India and San Francisco, that once it is established that plague exists among the Asiatics of a town, every Asiatic who has fever should be suspected as a case of infection with plague until the disease is proven to be other than plague, and every dead body should be treated as a plague cadaver until bacteriological examination of glands, lungs, and spleen (including animal inoculation) has proven the absence from the body of the B. pestis. Only by such caution will it be possible to avoid missing actual plague cases."

All the cases were verified by scrupulous pathological and bacteriological examinations and tested by experimental inoculations on animals.

CONNECTICUT.—The State Board of Health Bulletin reports for March: Total deaths, in 168 towns with an aggregate population of 908,355, 1,441; death rates, for the large towns, 18.3; for the small towns, 21.0; for the State, 19.3; deaths under five years, 361; from cerebro-spinal meningitis, 6; typhoid fever, 4; malarial fever, 4; scarlet fever, 9; measles, 7; erysipelas, 12; whooping cough, 8; croup and diphtheria, 29; diarrhœal diseases, 11; acute respiratory diseases, 309; consumption, 134.

Typhoid fever epidemic is reported ("Register") May 10th, much abated. With 462 cases since April 4, the health department officials say that it is gratifying to report that the death rate has been less than nine per cent. Many of the cases of typhoid are

now convalescent, and the recovery of many now seems assured from what the health department officials have learned after consulting physicians in attendance.

The hospitals are clearing out patients who have passed the critical stage, and are now able to be cared for at their homes. There have been but seven cases, all secondary, reported in the past ten days.

Secretary Lindsley of the State Board reports the conditions of the fever from the outset, in the bulletin for April, as follows:

"On the 3d of April, 1901, six cases of typhoid were reported to the health officer, all in one section of the city. This was indicative of a fresh localized infection which threatened further results. An investigation was begun at once with such success that on the following day it was discovered that one reservoir, supplying the section of the city in which the fever patients resided, had become infected from a family living on its watershed. The water was immediately shut off from its consumers, and has not since been used. New cases continued to be reported daily in increasing numbers until the 9th of April, on which day 95 were reported. From that date the numbers gradually diminished until near the end of the month, when they ceased. This termination of the outbreak was expected, as the period of incubation after the 4th of April had expired. During April, between the 3d and the 30th, 455 cases were reported at the office of the Board of Health. Some of these were reported as 'suspicious,' and others were prematurely stated to be typhoid, but afterward proved not to be. A careful inquiry is being made to determine as close as possible the number of true cases.

"The total deaths at this date, May 12, have been 54, nearly 12 per cent. of the cases reported. The reservoir has been emptied completely, and the pipes flushed with water from other sources. The reservoir has been refilled and will stand, by order of the Board of Health, unused a month and then drawn off, and may again be refilled for renewed use.

"The New Haven Water Company, under its present management, has been and are making many efforts to protect the water from contamination. Many hundred acres of watershed have been purchased and cleared of all sources of pollution. The large extent of watershed contributing to the supply is constantly patrolled. The town health officers are paid for reporting to the company every case of typhoid fever occurring near any tributary to the reservoir.

"Notwithstanding all the above precautions, this disastrous accident has occurred, and illustrates more emphatically than any argument the danger of disposing of typhoid excretions without previous disinfection."

The Yale Alumni Weekly has been making (May 10th) investigations of the relative prevalence of typhoid in New Haven and other cities for a period of years, and finds:

Average number of deaths per year from typhoid fever, per 1,000 inhabitants in the largest cities in the United States for nine years (1890-98)..... 0.43

Same for New Haven..... 0.29

Of the 34 cities as large as or larger than New Haven, according to the population of 1899, statistics for 29 are available. Of these only eight, New York, Worcester, Omaha, Milwaukee, Lynn, Cambridge, Detroit and Rochester have as small a typhoid death rate as New Haven.

The following comparison of typhoid fever death rates in large student centres is of interest: Providence, 0.32; Baltimore, 0.40; New York, 0.18; Chicago, 0.62; New Haven, 0.29. This is interesting, but *the reason* for this epidemic, so clearly pointed out by Prof. Lindsley, suffers no dilution because some other places are just as bad.

The Twenty-third Annual Report of the State Board of Health, for 1899, is replete with matter of practical importance to the whole State. It summarizes the progress of sanitary effort from the time of its organization in 1878 to the present. Previous to that date no provision existed for organizing sanitary undertakings, relating to the State as a whole. No means existed of learning the general health of the State, or of applying modern methods of promoting it. Contagious diseases were not reported or effort to restrict them attempted, except in cases of small-pox.

What the State Board of Health has done will be appreciated by contrasting present methods of sanitary administration and vital statistics with the previously existing condition. The heterogeneous mixture of selectmen and justices of the peace, then called a Board of Health, is now abolished. Instead, in every place is a single health officer, whose pay is regulated by law and who is responsible for the sanitary condition of his jurisdiction.

The report claims that no sanitary legislation has produced better results than that which placed the responsibility upon an individual in each town, severed his connection with party politics, made his office independent of the popular vote, extended its tenure to four years, and provided proper compensation.

Other important legislation secured by the influence of the State Board of Health requires that at stated monthly periods it shall receive accurate mortality reports and reports of contagious diseases from every town in the State.

These reports, which are collected with more accuracy in Connecticut than in any other State in the Union, keep the State Board in constant touch with the members of the medical profession and with the condition of public health in every part of the State. Thus the Board is enabled to render such advisory service and to issue such circulars of instruction as the occasion may demand. A statement of the public health and of the meteorological conditions of the previous month is published in a monthly bulletin issued to every citizen who desires it. And thus the general public are kept informed.

The report says there is no instance on record of the presence of measles, scarlet fever, diphtheria and typhoid fever in so many towns as in the past year. But there are frequent records of many times the mortality from them.

The lessened mortality is due in large degree to the vigilance of health officers in the prompt application of the known means of preventing these preventable diseases. The evidence is convincing beyond dispute of the success attending such efforts, and the failure following their neglect. The testimony of the health officers is that whenever they had the active co-operation of the communities they served, such diseases were arrested or restricted, and the same testimony shows that whenever isolation of patients was resisted and disinfection neglected, the diseases became more or less epidemic. Although the above diseases were present in more towns than in any previous year, yet by reason of the vigilance of the health officers in the care of the primary cases, the deaths from them were 142 less than the average annual number of deaths in the previous 20 years.

The tabulation of the births, marriages and deaths, and the causes of deaths, constitutes the chief part of the annual registration report. In the aggregate there were 20,395 births in the State in the year ending October 31, 1900; there were 7,024 marriages and 16,263 deaths, and of the last 10 per cent. were caused by pneumonia. On the basis of the census there were, per 1,000 population: 22.4 births; 15.4 marriages and 17.9 deaths.

Sanitary administration in Connecticut is better than it ever was before, and there are still other means of improving it. On the lowest money estimate of the cost of sickness and funerals, preven-

tion of disease during the year through the organized work of its health officers has saved to its citizens many times their cost.

The report strongly urges the employment of sanitary inspectors, other than the health officers, for economical and other reasons, and emphatically objects to requiring complaints of nuisances to be made in writing over the signature of the complainant. It says no citizen should be compelled to complain of his neighbor in order to have a nuisance abated that is dangerous to the health of his family.

The report heartily endorses the project to establish a hospital for consumptives, as an economic, prudent and statesmanlike enterprise. It also urges the importance of local hospitals in every considerable town and city, for the isolation of primary cases of contagious diseases, as a means of preventing their spread and saving life.

The report urges the importance and value, as a form of applied sanitary science, of providing gratuitous examination of morbid specimens for the early and positive detection of suspected infectious diseases.

It recommends strongly the more general practice of systematic inspection of school children.

COLORADO.—A "healer" of Denver, who claims kinship to Jacob and Moses, and the power to cure disease by sending "vibrations to any distance," recently pleaded guilty to improper use of the mails and was fined $25.

DISTRICT OF COLUMBIA, 278,718. The Health Officer reports for four weeks ending April 27, 1901: Total deaths, 430; death rate, 20.0; deaths under five years, 98; from typhoid fever, 7; scarlet fever 1; croup and diphtheria, 4; acute respiratory diseases, 62; consumption, 65; cancer, 17.

ILLINOIS.—Chicago, 1,758,025. Report for March: Total deaths, 1,958; death rate, 14.07; deaths under five years, 604; from typhoid fever, 15; scarlet fever, 14; measles, 4; whooping cough, 23; croup and diphtheria, 37; acute respiratory diseases, 412; consumption, 226; cancer, 61.

INDIANA.—*Small-pox* excepted, the general health in the State was better during April, as compared with March. The order of diseases prevalent was: Rheumatism, tonsillitis, influenza, bronchitis, measles, pneumonia, diarrhœa, typhoid fever, intermittent fever, pleuritis, whooping cough, scarlet fever, erysipelas, dysen-

tery, inflammation of bowels, diphtheria and croup, cholera morbus, puerperal fever, cerebro-spinal meningitis, cholera infantum.

The following diseases decreased in area of prevalence as compared with the preceding month: Rheumatism, tonsillitis, influenza, bronchitis, pneumonia, pleuritis, scarlet fever, diphtheria and croup, puerperal fever, cerebro-spinal meningitis.

Small-pox prevailed in the following counties during April: De Kalb, 30 cases; Vermillion, 6 cases; Howard, 16 cases; Steuben, 7 cases; Dearborn, 3 cases; Fayette, 9 cases; Hamilton, 5 cases; Lawrence, 22 cases; Fulton, 15 cases; Park, 1 case; Clay, 27 cases; Putnam, 1 case; Madison, 5 cases; Dubois, 23 cases; Clinton, 10 cases; Delaware, 7 cases; Switzerland, 36 cases; Ripley, 5 cases; Marion, 34 cases and 1 death.

We feel impelled to make the usual statement that many physicians still fail to diagnose the disease. Even typical cases are very frequently missed. Anti-vaccination literature is widely distributed, and vaccination is considerably prevented thereby.

IOWA.—Davenport, 35,254. Report for March: Total deaths, 44; death rate, 14.9; deaths under five years, 8; from typhoid fever, 1; erysipelas, 3; measles, 1; diphtheria, 1; acute respiratory diseases, 4; consumption, 5; cancer, 1.

KANSAS—*Reforms in Care of Insane.*—The board of charities will divide the three insane asylums into special institutions. The new asylum at Parsons will be used for the care of epileptic patients; the Topeka asylum for incurables and the Ossawatomie institution for convalescents, or patients who can recover. Instead of erecting one large building at Parsons, it has been decided to build a number of cottage buildings, enough to hold from fifty to eighty patients each. The cost of their construction will be a little more than if one large building were erected, but the board thinks the results will justify the increased cost.

LOUISIANA.—New Orleans, 300,000—90,000 colored. Report for March: Total deaths, 540—213 colored; death rates, white, 18.6; colored, 28.4; total, 21.6; deaths under five years, 75—30 colored; from cerebro-spinal meningitis, 3; typhoid fever, 8; malarial diseases, 2; small-pox, 11; scarlet fever, 10; erysipelas, 1; whooping cough, 1; croup and diphtheria, 2; diarrhœal diseases, 7; acute respiratory diseases, 80; consumption, 77; cancer, 18.

The Louisiana Lepers' Home.—The Gustine plantation, recently bought for a lepers' home, has aroused such strong opposition among the people of the surrounding parishes of Jefferson and

St. Charles as may possibly prevent the establishment in that locality. The school boards and boards of health of Jefferson and St. Charles parishes and the town council and board of health of the city of Kenner have also joined in the petition against the location of the lepers' home.

MARYLAND.—Baltimore, 541,000. Report for March: Total deaths, 966; death rate, 21.42; deaths under five years, 265; from typhoid fever, 2; whooping cough, 6; croup and diphtheria, 16; acute respiratory diseases, 199; consumption, 112; cancer, 33.

MICHIGAN.— The secretary reports for the month of April, 1901, compared with the preceding month, intermittent fever, measles and remittent fever were more prevalent, and diphtheria less prevalent. Compared with the average for April in the 10 years, 1891-1900, scarlet fever, typhoid fever and small-pox were more than usually prevalent; and consumption, intermittent fever, measles, remittent fever, inflammation of bowels, whooping cough and diphtheria were less than usually prevalent.

Including reports by regular observers and others, cerebro-spinal meningitis was reported present at 11 places; whooping cough at 25 places; diphtheria at 55 places; measles at 62 places; typhoid fever at 69 places; small-pox at 139 places; scarlet fever at 153 places, and consumption at 209 places.

Reports from all sources show cerebro-spinal meningitis reported at 6 places more; whooping cough at 4 places more; diphtheria at three places less; measles at 13 places more; typhoid fever at 6 places less; small-pox at 23 places more; scarlet fever at 25 places less, and consumption at 18 places more, in the month of April, 1901, than in the preceding month.

May 8.—Since the first of January outbreaks of small-pox in 134 localities in Michigan have been caused to cease; and in 96, or 72 per cent. of those outbreaks *the disease was restricted to the one household where the first case occurred.* Notwithstanding this splendid record of effective work by the health services, State and local, the disease continued to spread, because in the other outbreaks where the disease was not restricted to the first household, it was first called "Cuban Itch," "Cedar Itch," chicken-pox, or acne, and not reported to the health officer so that restrictive measures could be taken. Because of such lack of proper reports, small-pox continued to spread. It is now present in 109 places in Michigan, the same as in the preceding week.

Deaths reported to the Secretary of State as occurring in Michi-

gan during the month of April, 2,999, equivalent to a death rate of 15.3 per 1,000 population. This number is 489 less than the number reported for the preceding month, and 47 less than the number of deaths returned for April, 1900. Deaths of infants under one year of age, 497; from one to four years, inclusive, 175; and 884 deaths of persons aged 65 years and over. Deaths from phthisis, 207; other forms of tuberculosis, 34; typhoid fever, 32; diphtheria and croup, 42; scarlet fever, 17; measles, 5; whooping cough, 15; pneumonia, 361; influenza, 142; cancer, 101; accidents and violence, 132.

The principal decline for the month was shown in the deaths from pneumonia and influenza, which were considerably less than those reported for March. Small amounts of decrease were also shown in the deaths from typhoid fever and scarlet fever. For the first time in some months, no death from small-pox was reported.

MINNESOTA.—Minneapolis, 240,000. Report for March: Total deaths, 263; death rate, 10.9; deaths under five years, 75; from typhoid fever, 26; whooping cough, 1; croup and diphtheria, 10; acute respiratory diseases, 49; consumption, 21; cancer, 9.

St. Paul, 165,000. Report for March: Total deaths, 156; death rate, 11.3; deaths under five years, 48; from typhoid fever, 2; scarlet fever, 1; croup and diphtheria, 3; acute respiratory diseases, 31; consumption, 18.

War on Osteopaths.—Health Commissioner Hall has resolved to make an example of physicians that fail to report to the health department contagious diseases that come under their care, and has begun with an osteopath. Yesterday he caused the arrest of "Dr." D. J. Kenney, an osteopath physician with an office in the Globe building, for failure to report a case of what he diagnosed as typhoid fever, and which afterward proved to be small-pox.

"Dr." Kenney says in his own defense that he did not know that physicians were required to report typhoid fever to the health department. At the same time he admits, according to the health commissioner, that he learned afterward that the patient was suffering from small-pox, and still he made no report of the case. It is said that no osteopath in Minneapolis has ever reported any contagious disease that came in the line of his practice.

Dr. Ringnell, secretary of the State Board of Medical Examiners, has interested himself in the case, and he purposes to follow it up farther by causing "Dr." Kenney's arrest for practicing medi-

cine without a license. The point of the right of osteopaths to practice medicine in Minnesota has never been tested in the courts. Here, it is argued, is a chance to make a conclusive test of the matter.

The Minnesota Legislature has passed the bill which forbids the marriage of persons afflicted with insanity or certain chronic diseases. It carries the prohibition so far as to include persons whose parents, grandparents, mothers or sisters have been thus afflicted.

MISSOURI.—St. Louis, 575,200. Report for March: Total deaths, 915; death rate, 19.0; deaths under five years, 205; from cerebro-spinal meningitis, 2; typhoid fever, 11; malarial diseases, 4; small-pox, 2; scarlet fever, 5; measles, 5; whooping cough, 2; croup and diphtheria, 34; diarrhœal diseases, 12; acute respiratory diseases, 204; consumption, 96; cancer, 27.

Reorganization of the State Board.—The board is composed of seven members—five allopaths, one homeopath and one eclectic. The allopaths are Dr. A. W. McAlester, Dr. B. G. Dysart, Dr. W. F. Morrow; the officers, Dr. E. B. Elkins of Ozark and Dr. D. T. Powell of Thayer. The homeopath is Dr. J. H. Thatcher of Oregon. The eclectic is Dr. E. C. Standle of St. Louis. Dr. A. W. McAlester of Columbia was elected president; Dr. B. G. Dysart of Paris, vice-president, and Dr. W. F. Morrow of Kansas City, secretary.

NEW JERSEY.—Newark, 250,000. Report for the week ending April 27, 1901: Total deaths, 69; death rate, 14.3; deaths under five years, 12; from cerebro-spinal meningitis, 1; acute respiratory diseases, 10; consumption, 11.

Hudson County (Jersey City and vicinity), 386,048. Report for the year 1900: Total deaths, 7,862; death rate, 20.4; deaths under five years, 2,857; from cerebro-spinal meningitis, 1; typhoid fever, 69; malarial fevers, 17; scarlet fever, 46; small-pox, 1; measles, 31; whooping cough, 65; croup and diphtheria, 250; acute respiratory diseases, 1,237; consumption, 891.

Report for March: Total deaths, 755; death rate, 18.5; deaths under five years, 171; from typhoid fever, 1; small-pox, 1; scarlet fever, 6; croup and diphtheria, 9; acute respiratory diseases, 124; consumption, 81.

Paterson, 105,171. Report for March: Total deaths, 169; death rate, 18.9; deaths under five years, 50; from typhoid fever, 1; scarlet fever, 1; croup and diphtheria, 4; acute respiratory diseases, 36; consumption, 31; cancer, 2.

NORTH CAROLINA.—The State Board of Health Bulletin reports for March: Total deaths in 25 towns, with an aggregate population of 126,890, 214—108 colored; death rates, white, 16.4; colored, 26.4; total, 20.2; deaths under five years, 39; from typhoid fever, 2; scarlet fever, 1; malarial fever, 2; whooping cough, 3; measles, 1; pneumonia, 44; consumption, 29; brain diseases, 1; heart disease, 20; neurotic diseases, 4; diarrhœal diseases, 3; violence, 6; all other causes, 88.

OHIO.—Cleveland, 390,000. Report for March: Total deaths, 527; death rate, 16.2; deaths under five years, 167; from typhoid fever, 10; scarlet fever, 1; croup and diphtheria, 7; small-pox, 2; erysipelas, 4; acute respiratory diseases, 84; consumption, 44; cancer, 13.

Youngstown reports an epidemic of *typhoid fever*. In the month of April 88 cases—in the last week, 48. Usual cause—*polluted water* by surface filth and heavy rainfall—nobody to blame!

Cincinnati's schools are described ("Post," April 23d) as being in a very discreditable condition. Poorly lighted, insufficiently ventilated, and with antiquated and foul-smelling outhouses. Dust everywhere, due to the fact that the floors are scrubbed only at intervals of weeks, instead of every day. Appalling conditions were found in the toilet arrangements at the Third District School, which was spoken of as a "contamination." The dangers to health there need immediate attention if the lives and health of pupils and teachers are not to be jeopardized during the hot weather.

At five schools specially referred to, it was found that pupils of widely varying sizes are compelled to sit at desks of uniform size. Several cases of curvature of the spine were found, which were traced directly to desks in which the pupils could not sit comfortably.

The State Board Bulletin for the first quarter shows that since the first of the year there have been outbreaks of small-pox at 123 places in Ohio. There have been altogether in that time 1,360 cases and 19 deaths. During the month of March there were 321 cases and 2 deaths.

As to the other contagious diseases in the State during March the bulletin shows the following: Diphtheria, 206 cases and 29 deaths; scarlet fever, 362 cases and 12 deaths; typhoid fever, 166 cases and 35 deaths; whooping cough, 30 cases and 4 deaths; measles, 944 cases and 4 deaths.

PENNSYLVANIA. — Philadelphia, 1,293,697. Report for four weeks ending April 27, 1901: Total deaths, 1,925; deaths under

five years, 536; from cerebro-spinal meningitis, 2; typhoid fever, 28; small-pox, 3; scarlet fever, 24; erysipelas, 9; whooping cough, 23; croup and diphtheria, 40; acute respiratory diseases, 314; consumption, 258; cancer, 47.

Pittsburg, 332,000. Report for four weeks ending April 27, 1901: Total deaths, 492; death rate, 19.1; deaths under five years, 157; from cerebro-spinal meningitis, 1; typhoid fever, 24; small-pox, 1; scarlet fever, 5; erysipelas, 4; whooping cough, 13; croup and diphtheria, 9; acute respiratory diseases, 93; consumption, 32; cancer, 12.

Philadelphia, May 7.—The report of Chief Register Show to the Board of Health to-day was rather startling, in that it showed that during the last week and last year there were in Philadelphia more deaths than births.

It has generally been thought that this condition applied only to the City of Paris, where it is said to be the result of immorality. During the last week there were in this city 413 births and 565 deaths. During the last year there were 10,013 births and 10,510 deaths.

Tuberculosis has so long flourished triumphantly that the Woman's Sanitary League yesterday deemed it advisable to start a crusade in an effort to stamp it out..

At the request of the club Dr. Lawrence F. Flick, president of the Society for the Prevention of the Spread of Tuberculosis, addressed the members and friends on this subject. He said in part that:

"It would probably not be an exaggeration to say that at least one-third of all deaths in every civilized community are either directly or indirectly due to tuberculosis, For the United States alone we have annually a death rate from consumption and marasmus, which is undoubtedly tuberculosis, of upward of 100,000. Taking the United States as a base of calculation, it is probable that throughout the civilized world there are annually 1,000,000 deaths from these two forms of tuberculosis only. In the heart of Africa this disease is unknown, yet the African and Indian are more susceptible to the disease than the other races." It is interesting to note that the disease has been much reduced within the last year.

TENNESSEE.—At the semi-annual meeting of the State Board of Health in Nashville, May 4th, resolutions were adopted recognizing the danger of transmitting tuberculosis by means of infected milk, and urging that the representatives of all State and charitable institutions having charge of the feeding of inmates be no-

tified of this danger, and that the Board recommend that such superintendents require of purveyors of milk to their institutions to have their milk cans tested for tuberculosis.

The Board continues to be stinted by the Legislature, insomuch that it is crippled for effective work. A bill was introduced to authorize the prevention of the spread of communicable diseases where the county boards failed or refused to act. It was rejected on the ground that it would give the State Board too much power, and the country members were opposed to curtailing the authority of their county boards. Other measures that were introduced and died on the calendars were the pure food bill, the bill to compel the State Board to collect and publish vital statistics, and the bill to make vaccination compulsory in certain instances. The epidemic fund was cut half in two and is now only $2,500. The regular fund for the maintenance of the board was cut from $1,000 to $500 per annum. And it will be impossible for the board to publish any of its reports, because there was not made an appropriation for this purpose. Another vital change was made by taking the live stock department from under its supervision and placing it under the control of the Bureau of Agriculture. The salary of the live stock commissioner was put at the same figure, $1,500 per annum, but the fund for the maintenance of the department was reduced from $3,500 to $2,500 per annum.

UTAH.—Salt Lake City, 70,000. Report for March: Total deaths, 57; death rate, 8.14; deaths under five years, 15; from typhoid fever, 1; small-pox, 2; whooping cough, 1; diphtheria, 3; acute respiratory diseases, 5; consumption, 5; cancer, 2.

WASHINGTON.—Seattle, 90,000. Report for March: Total deaths, 74; death rate, 9.86; deaths under five years, 17; from diphtheria, 1; measles, 1; whooping cough, 1; acute respiratory diseases, 15; consumption, 10.

WISCONSIN.—Milwaukee, 295,000. Report for March: Total deaths, 339; death rate, 13.5; deaths under five years, 126; from typhoid fever, 4; scarlet fever, 1; whooping cough, 4; croup and diphtheria, 12; other epidemic diseases, 12; acute respiratory diseases, 79; consumption, 41; cancer, 17.

HAVANA.—Major and Surgeon Gorgas, chief sanitary officer, reports for the year 1900: Yellow fever stands eighth in the records of deaths for the year. Tuberculosis, with 851 deaths; diarrhœa and enteritis, with 506 deaths; organic diseases of the heart, with 443 deaths; meningitis, with 395 deaths; diseases of the arteries, with 357 deaths; malaria, with 344 deaths, and pneumonia,

with 319 deaths, each have caused a greater mortality than yellow fever. Typhoid fever, diphtheria, small-pox and other epidemic diseases, have caused a comparatively small mortality. Tetanus played a considerable part in the mortality of Havana. Of yellow fever there were 1,244 cases; 920 were Spaniards, with a death rate slightly above the average death rate for the city, which was 24.90 per cent., while among the Americans there were 235 cases, with a death rate of a little over 14 per cent., very much below the average. Of the cases occurring, about two-thirds had been in Cuba less than one year, the large majority of these being recently arrived Spanish immigrants. The immigration has been very large, the last four months of the year giving a little more than 11,000.

The effect of the measures adopted for ridding Havana of the foci of infection has been very marked. Of the 857 occupied blocks making up this city, 452 have had one or more cases of yellow fever in them. In these blocks there are 26,701 houses; of these, 885 have shown evidence of infection by having had one or more cases. Of the 885 infected houses, 694 were successfully disinfected by one disinfection, as shown by the fact that they had only one case; 130 required two disinfections; that is, of the 885 infected houses, all but 61 were freed from yellow fever after the second disinfection. This is evidence of the success of careful isolation and prompt disinfection, and I think in itself alone makes an excellent return for the whole expense of the Sanitary Department.

Of the 24,000 immigrants during the year, 21,000 came from Spain. This accounts for the large proportion of Spaniards among our yellow fever cases. Particular attention is invited to the large amount of sanitary work done. The report shows that each house in the city was inspected three times during the year. Each of these inspections involved a careful report on a printed form. More than half the houses were actually cleaned by the cleaning brigades. The result of this work is plainly perceptible not only in the decreased mortality, but in the very clean general condition of the interior of the houses.

Tabulated statistics of deaths by months are given for the past eleven years, also the yearly average for the ten years preceding 1900, and at the foot of the columns the totals for the various years. It will be seen from this table that in 1900 Havana had a smaller number of deaths than in any one of the preceding ten years. 1893 was the next, with 6,697 deaths, some 500 more than we had last year. The average number of deaths for the ten

years was 10,243. We had last year 4,000 less than this average. This average, of course, was greatly increased by including the three years of reconcentration. When we compare death rates, like favorable conditions will be seen. The death rate for 1900 was only 24.40, while the lowest of the preceding ten years, 1893, was 30.66, and for the first year of our occupation, 1899, it was 33.67.

Deaths, by months and by years, from yellow fever for the past eleven years, show that in the eleven years there were only three years that had fewer deaths from yellow fever than in 1900, and that the total of the two years of American occupation, 1899 and 1900, was considerably less than the total of any two preceding years. He thinks it is not too much from these figures, to state that the measures, sanitary and otherwise, taken by the American authorities with a view of improving the health of the city, have been most eminently successful; that this work has reduced the death rate of 1898, the last year of Spanish rule, from 91.03, which represents 21,252 deaths, to 24.40, representing 6,102 deaths; that the methods being pursued have caused a steady improvement in the sanitary conditions of Havana; that during the last year we have decreased the death rate from 33.67, representing 8,153 deaths, to 24.40, representing 6,102 deaths. Taking the average number of deaths per year for the ten years, 10,243, which would be for the two years 20,486, as representing what the deaths would have been if we had not interfered, and deducting from this the actual number of deaths, 14,255, which have occurred in the two years of our occupation, it leaves 6,231, which represents the number of lives saved in the City of Havana by our efforts.

CITY OF MEXICO, 344,377. Deaths reported for the month of January, 1901 (latest report received), 1,533. Prevailing causes: Diarrhœal diseases, 290 (102 infantile); tuberculosis, 149; pneumonia, 133; bronchitis, 120; heart diseases, 67; *typhus fever*, 62; cirrhosis of the liver, 60; broncho-pneumonia, 58; meningitis, 41; traumatic accidents, 41; apoplexy, 25; cancer, 19; other causes 1 to 15. Annual death rate, 53.4.

Press dispatch from the City of Mexico, April 11: The prevalence of typhus fever here has elicited the statement from the Board of Health to the effect that 945 persons died from the disease in this city during the first three months of the year.

HEALTH CONDITIONS IN THE PHILIPPINES.

Dr. Robert J. Sloan, of Shanghai, an American physician with special qualifications for the work ("New York Times," May

13th), has made the first scientific investigation of the healthfulness of the Philippines and their suitability for occupation by Americans. It is a land of perpetual summer. The average shade temperature is 82 degrees Fahrenheit. The year is divided into three seasons—the rainy season, from July to September, during which the precipitation is usually about 100 inches; the cold season, from October to January, and the hot season, from February to May, all inclusive. The normal range of temperature seems to be between 70 and 100 degrees Fahrenheit. It is consequently an enervating climate for one coming from the north temperate zone, but shares this quality with all tropical countries. The relatively high death rate of the islands is chiefly among the natives, and averages 36.24 in the thousand. How this is divided the now correct vital statistics of Manila will show. In December last the estimated population of that city was 300,000. The total deaths for the month were 905, distributed as follows: Natives, 877; Chinese Mestizos, 20; Spanish, 3; English, 2; Roumanians, Italians and Americans, 1 each. By recent report by the Division of Insular Affairs, War Department, the annual death rate of Manila for 1900 was 34.47.

YELLOW FEVER ON SHIPBOARD.—On April 19th, H. M. S. "Condor" arrived at the Williamshead Quarantine Station, B. C., flying the yellow flag at her mast-head. The vessel sailed from Acapulco on April 9th. The exact number of cases of yellow fever among her crew has not yet been ascertained, but the vessel is still in quarantine, and will be thoroughly disinfected.

THE HIGHEST DEATH RATE IN THE WORLD.—A cable dispatch to "The Sun" from Durban, Natal, states that it is reported there that the Delagoa Bay district of Portuguese East Africa has been terribly affected by fever. In the last three months there have been five hundred deaths. The normal population is about three thousand, but this has been reduced owing to the war and the commercial depression resulting therefrom. This is the highest death rate in the world, and if it continues it will mean the extermination of the Europeans in that territory.

RECENT CENSUS REPORTS ABROAD.

POPULATION OF ENGLAND AND WALES.

According to the returns of this year's census, the total population of England and Wales is 32,525,716. This is an increase over

the population of 1891 of 3,523,191, or, in other words, an increase of 12.15 per cent. in the last ten years. The increase for the decade between 1881 and 1891 was 11.65 per cent. According to the census, forty-eight counties show increases and fourteen decreases.

GREATER LONDON POPULATION, 6,578,784.

The population of the outer ring of the suburbs of London is 2,042,750, as against 1,405,489 in 1891, 950,957 in 1881, and 631,-831 in 1871. The total population of Greater London, including the outer ring of suburbs, is now 6,578,784.

DECREASE IN IRELAND'S POPULATION.

The census of Ireland shows the population to be 4,456,546, a decrease of 5.3 per cent. This is less than during the previous decade. Scotland has a population numbering 4,471,957 persons.

DEPOPULATION OF FRANCE.

The depopulation of France has drawn the attention of medical men to the cause and a remedy. In 1870 the population was increasing by 2.57 units per thousand in France, 7.16 in Austria, 7.26 in Italy, 10.33 in Germany and 12.18 in England. At present the gain is only 0.81 in France, 10.6 in Austria, 10.7 in Italy, 11.2 in England and Russia, and only 15.6 in Germany. This shows how rapidly France is being surpassed in population by other nations, and it is of importance to know what can be done to counteract this tendency. The increase in the number of births is one that is more a question of ethics, but as for the death-rate of infants, a book recently published by Senator Strauss, called "Depopulation and Puericulture," tends to show what might be done in this line. Public opinion has not as yet been awakened to the importance of the principles of social hygiene, and a great deal has yet to be done in France as elsewhere.

EXHIBITION OF FOOD ARTICLES AND COOKING IN BELGRADE.

Consul-General Guenther reports from Frankfort, February 5, 1901:

German papers publish a telegram from Belgrade, Servia, stating that an international exhibition of food articles and for cooking and hygiene will be held there in April of this year. It will be under the protectorate of the Queen of Servia. A committee has been appointed for the purpose of furnishing information to interested parties. American firms intending to exhibit should at once correspond with our consul at Belgrade, in order to secure information without unnecessary delay.

BOOK REVIEWS.

AN ILLUSTRATED DICTIONARY OF MEDICINE, BIOLOGY AND ALLIED SCIENCES, INCLUDING THE PRONUNCIATION, ACCENTUATION, DERIVATION AND DEFINITION OF THE TERMS USED IN MEDICINE, ANATOMY, SURGERY, OBSTETRICS, GYNECOLOGY, THERAPEUTICS, MATERIA MEDICA, PATHOLOGY, DERMATOLOGY, PEDIATRICS, OPHTHALMOLOGY, OTOLOGY, LARYNGOLOGY, PHYSIOLOGY, NEUROLOGY, HISTOLOGY, TOXICOLOGY, DIETETICS, LEGAL MEDICINE, PSYCHOLOGY, CLIMATOLOGY, ETC., ETC.; AND THE VARIOUS SCIENCES CLOSELY RELATED TO MEDICINE: BACTERIOLOGY, PARASITOLOGY, MICROSCOPY, BOTANY, ZOOLOGY, DENTISTRY, PHARMACY, CHEMISTRY, HYGIENE, ELECTRICITY, VETERINARY MEDICINE, ETC. By GEORGE M. GOULD, A. M., M. D., Editor "American Medicine," President, 1893-1894, American Academy of Medicine; author of "The Student's Medical Dictionary," "21,000 Medical Words Pronounced and Defined," "The Meaning and the Method of Life."

BASED UPON RECENT SCIENTIFIC LITERATURE. FOURTH EDITION. Prices and bindings: Full Medical Sheep, Raised Bands, Net, $10.00. Half Green Morocco, Marbled Edges, Net, $10.00; with Thumb Index, Net, $11.00. Half Russia, Marbled Edges, Thumb Index, Net, $12.00. These prices are absolutely net. No discount can be allowed. PHILADELPHIA: P. BLAKISTON'S SON & CO., 1012 Walnut Street.

A dictionary of singular completeness and excellence, incomparably superior to any other we have had occasion to use during our more than a half century's need of frequent reference to medical dictionaries. This, the fourth, 1900 edition, comprehends thousands of new words and terms that have been introduced in medicine and the collateral sciences during recent years, insomuch that it is a veritable supplement to other dictionaries and necessary to all who would have a thoroughly up-to-date and complete vocabulary. Moreover, it contains many skilfully constructed tables of great practical utility to students of anatomy, physiology, chemistry and bacteriology, with numerous illustrations. And from an artistic viewpoint it is of corresponding excellence with its literary merit. The paper, type, engravings and presswork are all excellent; the binding elegant, strong and supple—it opens flat at any page and so remains.

PRINCIPLES OF SURGERY. By N. SENN, M. D., Ph. D., LL. D., Professor of Surgery in Rush Medical College in Affiliation with

the University of Chicago; Professorial Lecturer on Military Surgery in the University of Chicago; Attending Surgeon to the Presbyterian Hospital; Surgeon-in-Chief to St. Joseph's Hospital; Surgeon-General of Illinois; Late Lieutenant-Colonel of United States Volunteers and Chief of the Operating Staff with the Army in the field during the Spanish-American War. THIRD EDITION. Thoroughly Revised, with 230 Wood-engravings, Half-tones, and Colored Illustrations. Royal Octavo. Pages, xiv—700. Extra Cloth, $4.50, net; Sheep or Half Russia, $5.50, net. Delivered. PHILADELPHIA: F. A. DAVIS COMPANY, PUBLISHERS, 1914-16 Cherry Street.

And only one year since the first edition! No better evidence could be adduced of the success of the author's effort in the first edition to so consolidate and present the fundamental principles of the art and science of practical surgery, generally lacking in former treatises, as to make them the gateway to an intelligent comprehension of the causation, pathology, diagnosis and prognosis necessary to the successful treatment of the injuries and affections which the surgeon is most frequently called upon to treat. This purpose is all the more effectually accomplished by the use he has made of the experimental and clinical material contained in his work on "Surgical Bacteriology." Thoroughly up to date as were the previous editions, the text has been thoroughly revised in this, and, besides, two new chapters added, one on "Degeneration" and the other on "Blastomycetic Dermatitis." Many new illustrations also have been added, excellently executed, as indeed the work is in all respects eminently commendable for both students and practitioners.

MALARIA ACCORDING TO THE NEW RESEARCHES. By PROF. ANGELO CELLI, Director of the Institute of Hygiene, University of Rome.

Translated from the Second Italian Edition by JOHN JOSEPH EYRE, M. R. C. P., L. R. C. S., Ire., D. P. H., Cambridge.

With an Introduction by Dr. PATRICK MANSON, Medical Adviser of the Colonial Office. 8vo., pp. 300. With Maps and Illustrations. Price, $3.00. Longmans, Green & Co., 39 Paternoster Row, London; New York and Bombay.

Probably no country in the world, taking it altogether, equals Italy as a field of labor for the investigation of malaria; and this book shows, as no previous publication has shown, that in no other country in the world has the subject been so thoroughly elucidated.

But, as Dr. Manson remarks, "unfortunately, so far as the English reader is concerned much of this literature is a dead letter. Englishmen and Americans who can read Italian are exceptions. So that hitherto it has only been after a considerable interval and through indirect and too often inaccurate translations, that many of us in England and America have learned about the revolutionizing work our Italian colleagues have been carrying on. More than one important fact has been common knowledge in Rome several years before it has percolated to London.

"To many of us the Sydenham Society's translation of *Marchiafava* and Bignami's book, "On the Summer and Autumn Malarial Fevers," by Dr. J. Harry Thomson and Dr. Edmonstone Charles, came as a revelation. Since the publication of the work, in 1894, and in a great measure in consequence, many of the profession in Britain, in the United States, and in their numerous tropical dependencies, have applied themselves to the study of the malaria parasite and added their quota to the common stock of knowledge on the subject. The Italians, however, have maintained their leading position, and when, two years ago, Ross's brilliant investigations placed the mosquito-malarial theory on an incontrovertible basis, they were the first to confirm his work, to extend it and to throw themselves energetically into the hygienic measures it so plainly indicated.

"Among other Italians, Prof. Celli, whose name has been so long and so honorably associated with the scientific study of malaria, on satisfying himself of the truth and practical value of the new departure, grafted a series of studies on the mosquito in its relation to malaria onto the work he was already engaged on in connection with the epidemiology of paludism. These studies, as this work bears ample evidence, have been conducted on the most rigid scientific lines. Throughout they bear the stamp of a master hand."

The work is divided into two parts: Epidemiology, which comprehends the history of malaria, with a map showing the local conditions. Statistical bulletin of malarial fevers and mortality from them in Italy. Economic losses. Under the head of etiology, the *Order of Sporozoa* are described and illustrated in minute detail; their different species and hosts; cultivation of the malarial parasites of man in the body of special mosquitoes. Sources of malarial infection: Man is shown to be the unquestionable source, the mosquito definitive host. Species of the malarial mosquitoes, soils and waters. Life of malarial germs in the environment;

vehicles of infection; path of penetration into the organism; predisposition; immunity; influence of seasons.

Part Second, Prophylaxis: Means directed against the infective causes, for destroying the malarial germs and means directed against the predisposing causes in detail—comprehending a lucid description of both topographical and social conditions predisposing to malaria and how to overcome them, disinfection and treatment; and tables showing the relative potency of culicidal substances and how to use them.

Altogether the work is conclusive in its demonstration of the sources of malarial infection, in what it consists, its nidus and how it is transmitted: primarily *man,* by a parasite nesting in, living upon and destroying the red corpuscles of his blood; secondarily, *mosquitoes* (anopheles superpictus, anopheles pseudopictus, and anopheles bifurcatus, chiefly the first named species), by sucking the blood of an infected person and subsequently biting other persons. A book of extensive practical utility with reference to malaria in all its aspects.

PUBLIC WATER-SUPPLIES—REQUIREMENTS, RESOURCES AND THE CONSTRUCTION OF WORKS. By F. E. TURNEAURE, C. E., Professor of Bridge and Sanitary Engineering, and H. L. RUSSELL, PH. D., Professor of Bacteriology, University of Wisconsin. With a chapter on PUMPING-MACHINERY by D. W. MEAD, C. E., M. Am. Soc. C. E., etc. First Edition—first thousand. 8vo. Pp. xiv + 746. 231 Figures. Cloth, $5.00. Order through your bookseller, or copies will be forwarded postpaid by the publishers on receipt of the retail price. New York: JOHN WILEY & SONS; London: CHAPMAN & HALL, Limited. 1901.

A volume of comprehensive scope, prepared with particular reference to the requirements of teachers and students in technical schools, where there has long been need of such work. "The work is based chiefly upon the experience of the first-named author in teaching the subject for a number of years in the institution with which he is connected, and has been written with special reference to use in his own class room."

While the fundamental principles of water supplies and methods of constructive work generally are condensed, but with sufficient detail to illustrate the principles and to show the differences in conditions involved, *full treatment* of the subject of the *quality of water-supplies* is very properly dwelt upon as the subject of pri-

mary importance and very thoroughly presented. The subject of ground-water receives merited consideration commensurate with its importance—a too much neglected subject in other works. The physical, chemical and bacteriological examinations of water, and the chapter on communicable diseases and water-supplies, are important features, well represented and particularly commendable. The details of construction are concise but lucid, with excellent illustrations, tabulated measurements and statistics.

HYGIENE AND PUBLIC HEALTH. By LOUIS PARKES, M. D., D. P. H. Lond. Univ., Fellow of the Sanitary Institute and Member of the Board of Examiners; Lecturer on Public Health at St. George's Hospital Medical School; Medical Officer of Health and Public Analyst for the Borough of Chelsea; Late Assistant Professor of Public Health at University College, London; and HENRY KENWOOD, M. B., D. P. H., F. C. S., Fellow of the Sanitary Institute and Member of the Board of Examiners; Assistant Professor of Public Health at the University College, London; Medical Officer of Health and Public Analyst for the Borough of Stoke Newington. 12 mo., pp. 753. With Illustrations. Price, $3.00. London: H. K. Lewis; Philadelphia: P. Blakiston's Son & Co., 1901.

This book succeeds one of the same title, by the senior author of this, that passed through five editions in the space of ten years. While that work to a considerable extent has been made the basis of this, this is a recast of it with the addition of much new matter. It is more particularly for and adapted to the requirements of medical students studying for the various Public Health diplomas, and as a manual for physicians with reference to the Public Health service; comprehends the essential principles of hygiene, knowledge of water supplies, purification and distribution; collection and disposal of excreta and other refuse; contagious diseases and how to deal with them; disinfection; sanitary law and administration, etc., with which every intelligent citizen should at least have a general knowledge. But besides this, to lay readers who would acquire knowledge of soils and building sites; climate and meteorology; air and ventilation; warming and lighting; exercise and clothing; foods, beverages and condiments; knowledge essential to the proper care of their own health, it is alike commendable as to students for a text-book, or physicians as a manual. It is sufficiently devoid of technicalities to be understood by intelligent readers generally.

UGLINESS THAT COSTS MONEY.

By tradition, rather than necessity, the modern factory is a paragon of ugliness. The owner appears to think that he has fulfilled his duty to his employees if he has provided running water and fire-escapes. It is not so greatly to his discredit that he does no more, because he has accepted custom in such matters, and if, now and then, he hears of improvements in other mills or in the way of running them, he dismisses the subject as the whim of sentimentalists, as of no practical consequence, and as a probable drag on business. Experience has proved this view to be a wrong one. The best protection against labor troubles is interest in the laborer. This interest need not and should not take the form of condescension and charity, which are demeaning and humiliating to their object, but should be a practical service which is no more called in question than is the workman's right to air, water and protection against danger from the explosion of chemicals or the escape of noxious vapors.

The things to be done need not involve great labor or expense. To keep the floors and windows clean does not appear to be a difficult undertaking; yet in a majority of factories in this country the floors are covered with oil and dirt, and the windows are so grimy as to make a sort of twilight, which is not only trying to the eyes but is depressing to health and spirits; and a dispirited man never works as does one who is cheerful. Soap and sunshine, therefore, are prime agents in the creation of comfort and content. But it is possible to do more than this. . . . It is sometimes argued that pleasant surroundings detract from the attention that should be given to work—as if a person ever worked the worse for being clean and warm, and having plenty of air and light!

There is yet another reason for concessions to the mill hands, and it is based on the present public interest in all schemes of betterment. The destruction of city slums, the increase of kindergartens, the establishment of free lectures, the appearance of the university settlement and of such institutions as Hull House, in Chicago, the substitution in reformatory cases of the indeterminate sentence for fixed terms of imprisonment, the legislation that enforces safety in mines and sweatshops, are tokens of the widening of a Christian spirit, and the improvement of factories is but in line with these reforms.—CHARLES M. SKINNER, in the "Saturday Evening Post."

"MACHIAVELLIANS UNAWARE."

The editor of the "Century" preaches a lay sermon in the May number of that magazine on "Doing Good that Good May Come."

There are always plenty of people—Machiavellians unaware—to uphold the doctrine that States must be unscrupulously selfish; that they are not to be bound by the code of private morals. There is always a temptation, even with the most honest and fair-minded men upon whom executive responsibility has temporarily devolved, to seize and hold every advantage in the supposed interests of the community. They do not wish it said, after their stewardship has expired, that through them the community suffered loss, that they were guilty of letting go an opportunity of benefit for the people whom they represented. Enough influences, moreover, are always at work to make a deviation from principle seem not what it is, but simply a manly stroke of statesmanship.

Now, we hold that it is wrong for statesmen, wrong for governments, and wrong for nations, to put themselves in the position of even seeming to act on Machiavellian lines. And for this reason: The action of a government, being necessarily influenced by many interests and many reasons and many motives, cannot easily be defended from a charge of selfishness, and so may stand forever suspected not only by the world at large, but by its own people, should it apparently depart from the straight path. In such a case its influence for good is destroyed abroad, while demoralization spreads over the body politic at home.

American statesmen, therefore, should be sustained by public opinion in doing the absolutely right thing. They should be upheld even in taking risks in right-doing; they should be encouraged not to do evil in hope that good may come, but to do right, and right only, that good may come. They should be made to understand that a nation not only should do right, but should not allow any public misconception as to the justice and the righteousness of its action. And they should tell their public servants that the stewardship of principle is vastly more important than the stewardship of property.

NOTES OF MUNICIPAL PROGRESS.

In our municipal government at present there is a great and wholesome struggle toward a higher and better order of things. This vigorous movement takes many different forms, four or five of which may be noted very especially. The first of these, and in

some ways the most important, is the general movement toward better principles and methods in the technical organization of a municipal government. A little inquiry shows that municipal reform in the United States is proceeding upon the whole very hopefully; and it is truly remarkable how rapid of late has been the growth of the sentiment in favor of non-partisanship in municipal elections and appointments. Many men who only four or five years ago were strict Republicans or Democrats even in local elections, are now avowedly with the independents where municipal matters are involved. Thus, it was the independent vote that turned the scale in Chicago and elected Carter Harrison again, although if the Republicans had nominated John M. Harlan, as it was at first supposed they would do, they would probably have carried the day by virtue of non-partisan support.—From "The Progress of the World," in the *American Monthly Review of Reviews* for May.

THE NORTH AMERICAN REVIEW for May continues the series of articles on Great Religions of the World with a paper on "Jews and Judaism in the Nineteenth Century," by the Rev. M. Gasler, Chief Rabbi of the Sephardi Communities of the British Empire. The distinguishing feature of the history of Jewish life during the past hundred years, Rabbi Gasler points out, has been the awakening and strengthening of self-consciousness and the desire of securing absolute equality with non-Jews. This tendency has asserted itself in all the walks of life, in politics as well as in science and religion, and Rabbi Gasler traces it from period to period as it exhibited itself among the Jews of various countries. Of Zionism, he says:

"We are standing at the beginning of this movement, which alone will assist in solving one of the most perplexing problems in modern sociology—will free Europe of an element which is still considered as alien, and will be treated as such, according to circumstances. There are some, among the richer Jews, who have vested interests and narrow conceptions; they are held fast in the meshes of self-delusion and cannot differentiate between the rights and duties of a citizen and the historical obligations of a national and religious life; they are still holding aloof from this movement. The vast masses, however, the sufferers and toilers of the earth, have rallied enthusiastically round it. This is the sign under which Judaism enters the new century."

The breadth, largeness, exhaustiveness which characterize the

discussions of the more important topics of the times which the editor of the "North American Review" provides for his readers, and which were impressively illustrated in the memorable symposiums on the South African war, the Chinese disturbances, etc., are again strikingly exemplified in the May number, by a group of articles on "Industrial and Railroad Consolidations," which constitutes the most thorough and practical exposition of the subject of the so-called "Trusts" that has ever been given to the public. Russell Sage shows why, in his opinion, the methods of consolidation involve "A Grave Danger to the Community"; James J. Hill, president of the Great Northern Railway, details "Their Advantages to the Public"; Charles M. Schwab, president of the United States Steel Corporation, writes of "Their Effects on the Steel and Iron Industry"; Charles R. Flint, treasurer of the United States Rubber Co., recounts "What They Have Accomplished for Capital and Labor"; F. B. Thurber, president of the United States Export Association, examines the "Influence of the 'Trusts' on Prices"; and James Logan, general manager of the United States Envelope Company, argues that these industrial combinations are the inevitable "Outcome of Unintelligent Competition."

Boys or girls with weak hearts are not just the ones to enjoy the most Cleveland Moffett's "Bridge-Builder" article in the May "St. Nicholas." The dim and perilous heights frequented by the workmen on the new Brooklyn Bridge, as a matter of daily routine, are appalling to the imagination, and Mr. Moffett has nothing to gain by minimizing the perils to which these stout-hearted fellows are constantly exposed; nor do the illustrations contradict what he says on the subject. Mark Twain appears as an inventor in a pageful of pictures accompanying an article in this number on the Patent Office at Washington, the subject being a "game apparatus," patented by S. L. Clemens on the 18th of August, 1885. An ingenious bicycle lamp, devised by a sailor lad, is the theme of George A. Williams' article, "A Young Inventor." The general reader will be surprised to learn, from an article by George E. Walsh, what progress has been made of late years, in this country and abroad, in the breeding and training of carrier pigeons, which now make little or nothing of a flight of five hundred miles a day. Three and twenty pages are given up to Nature and Science, the St. Nicholas League, the Letter Box and the Riddle Box.

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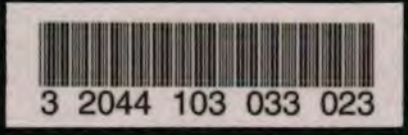
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